

AMERICAN

CINEMATOGRAPHER

The Motion Picture CAMERA Magazine

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1934

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Hollywood,

by
American Society of
Cinematographers

this issue

New Camera Shutter

Miniatures in Process Backgrounds . . .

Lighter Studio Lights.

Photography of the Month.

. . . and other features.

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AMERICAN CINEMATOGRAPHER

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of motion picture photography

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Next Month

■ Several pieces of new and interesting studio equipment will be described for the first time.

Men belonging to the A.S.C. have had some interesting saving commissions during the past few months. They have returned from the Seven Seas. We shall try to have them tell you their interesting stories.

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Society of Cinematographers, Inc.

THESE PHOTOGRAPHS REFLECT OUR INTEREST IN LIGHT CONTROL



1. A polished metal or mirrored glass surface gives accurate light control

ALTHOUGH an incandescent lamp can be used bare for photography, its light is made infinitely more effective by properly designed reflectors.

As these photographs suggest, the nature of reflecting surfaces plays an important part in determining the light control provided by reflectors. Notice what happens, as illustrated in photograph No. 1, when light strikes a polished metal or mirrored glass reflector. Such a surface provides most accurate control of light as it reflects the light in a definite direction. On the other hand, a surface that is practically matte, such as porcelain enamel, as photograph No. 2 shows, diffuses the light in all directions and permits little control. While, as photograph No. 3 shows, a semi-matte surface, such as treated aluminum, gives a spread of light, in a definite direction with controlled diffusion.

These facts about light control, fundamental in illumination and in cinematography, have been keenly studied by General Electric's engineers and scientists. Along with a basic knowledge of how to produce the lighting effects cinematographers use so successfully, these facts aid in developing new Edison MAZDA lamps to meet motion picture requirements. They also guide us in improving existing types of Edison MAZDA lamps and in helping you obtain full effectiveness from these lamps.

Coupled with the hundreds of tests, checks and inspections which Edison MAZDA lamps undergo, this study provides another reason why studios from coast to coast use Edison MAZDA lamps for every lighting need—from set lighting to process work. General Electric Company, Nela Park, Cleveland, Ohio.



2. A matte surface permits little light control



3. A semi-matte surface gives controlled diffusion in plane direction



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lamps and with units. Also
for floodlighting.

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can be used as reflectors in
the Electrical Building at
the Century of Progress.

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THE AMERICAN SOCIETY OF CINEMATOGRAPHERS was founded in 1918 for the purpose of bringing into closer confederation and cooperation all those leaders in the cinematographic art and science whose aim is and ever will be to strive for pre-eminence in artistic perfection and technical mastery of this art and science. Its purpose is to further the artistic and scientific advancement of the cinema and its allied crafts through unceasing research and experimentation as well as through bringing the artists and the scientists of cinematography into more intimate fellowship. To this end its membership is composed of the outstanding cinematographers of the world with Associate and Honorary memberships bestowed upon those who, though not active cinematographers, are engaged none the less in kindred pursuits, and who have, by their achievements, contributed outstandingly to the progress of cinematography as an Art or as a Science. To further these lofty aims and to fittingly chronicle the progress of cinematography, the Society's publication, *The American Cinematographer*, is dedicated

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YES!

Scene from "La Cavaudale" A Technicolor Picture. Made at RKO Studios. Photographed by Roy Renahan.

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Studio Camera with 270° Shutter

by
George Schneiderman, A. S. C.

THE CAMERA machine-shop of the Fox Studio is just completing the production of a camera which will, I am confident, revolutionize studio cinematography. It is a 270° studio camera, that is, a camera fitted with a shutter having a maximum angular aperture of 270°, and a movement which is, in design and operation, virtually the reverse of conventional practice. For some years I have cherished the theory that such a camera would be of inestimable benefit to the cinematographer, and this camera is now taking shape according to my specifications, to be used on my next production. The project is being executed under the engineering supervision of Glöwer Lohbe, of the Fox mechanical department, and both design and construction are being handled entirely by the studio forces.

Before going into any discussion of what we may reasonably expect such a camera to accomplish, it may be well to inquire why, if such a design is at all desirable, the idea was not long since incorporated into studio equipment. To my mind, this is due largely to the fact that it is only relatively recent that trained engineers have been interested in the problems of the cinema. Once Edison had made the Kinetograph a practical proposition, he turned his energies largely into other channels. From then on, the mechanical development of the motion picture became largely a matter of chance, and camera design was almost exclusively in the hands of highly skilled mechanics, rather than of trained engineers. When such engineers as A. S. Howell, A.S.C., and George Mitchell entered the motion picture industry, a considerable tradition had grown up around the design and functioning of cinematography. This they proceeded to stabilize, but, apparently reasoning, as well they might, that much if not all of this tradition had a sound, logical basis, they refrained from making radical alterations in the basic design practice. Accordingly, we are only now beginning to question many of the practices which they then accepted as basic and more or less unalterable.

The particular case in point is the theory that the greatest efficiency is obtained if the cycle of a cinema camera's shutter and film-movement are so synchronized that the movement of the film may be relatively slow, with a minimum of acceleration and deceleration. Using a rotating-disc shutter this would necessitate that the greater part of the arc be closed, to allow the maximum of time for the film-travel. This was, undoubtedly, desirable in the early days, when the design of film-movements was not so advanced as today, and when the film-base itself was

George
Schneiderman,
A.S.C.



notably less sturdy. Since then, however, advances have been made in film-manufacture and camera-design which I believe, eliminate this need. For many years we have successfully used high-speed cameras for slow-motion and miniature shots. These cameras operate at speeds up to—and even exceeding—eight times normal, thereby imposing upon the film strains far in excess of anything that would be encountered in normal-speed work with the shutter and movement cycles reversed.

Therefore, in my new camera, the shutter is almost exactly the reverse of those used in present-day equipment, while the design and operation of the film-movement is also a direct reversal of accepted practice. In the majority of production cameras today, the maximum angular aperture of the shutter is 170 degrees, and the closed sector subtends an angle of 190 degrees. In my camera, the shutter-opening is 270 degrees, and the closed sector 90 degrees. In conventional practice, the time-cycle is almost equally divided between the time the film is at rest, for the exposure, and the period devoted to its movement between the exposures—with the latter period having the advantage by slightly less than 10%. In the new design this will be more than reversed, with the film at rest for 75% of the time, and completing its movement in the remaining 25%. In addition, we are placing the shutter as close to the film as a physically possible, giving us as close an approach to a true focal-plane shutter as is possible with the rotating-disc type of shutter.

Now, what do we expect this camera to do in actual use? Obviously, of course, the increased opening will momentarily increase the exposure received by the film. Upwards of 50% more light will reach the film at each exposure, this will naturally permit us to use less light on the set, and to get more natural effects. Since the majority of cinematographers are today using a minimum of actual light-sources this advantage would probably be realized by using smaller units—500-watt globes where we now use 1000-watts, 2000-watt where we now use 5 kw, and so on.

Can We Have Lighter Lights?

by

Oliver T. Marsh, A. S. C.

WHEN SuperSensitive film was introduced to the camera profession, its proponents seized upon its greatly increased sensitivity to incandescent light, and forecast that it would make possible the development and use of smaller, lighter lighting units. This, it was truly stated, would facilitate production, requiring less time and labor in lighting, and give us more clear room on the stage in which to work.

Over three years have gone by since this emulsion made its bow. It is universally used. Yet we are today using essentially the same lighting equipment we used then, in most cases, our equipment dates back even to the first days of Panchromatic films. Except in a very few minor instances, new developments in lighting equipment are conspicuous by their absence. We are using equipment which was designed for use with the earliest panchromatic emulsions, while the emulsions in use today are at least 50% faster to artificial light. It would seem logical, therefore, to expect that the lighting equipment of today could be simplified proportionately. What can be done?

From the cinematographer's viewpoint, it would be eminently desirable to have smaller, lighter units for the "floor lighting." However, this saving in weight and bulk should not be achieved at any sacrifice of illuminating efficiency.

From the viewpoint of the designer of lamps, such improvement is possible, but the problem is complicated by the fact that the incandescent lamp, as we know it today, is quite as much of a heat-producing machine as a light-producer. With the high-intensity globes required for studio use, ventilation is a very important problem. The manufacturer must also consider the question of possible soles, a problem markedly aggravated by the existing depression. To be commercially practical, it would appear, any new equipment must be a very radical improvement over anything already existing.

The lamps most used for "floor lighting" purposes are the twin-bulb "broadside" and the "Rifle," for general lighting, with small condenser-spotlights, "baby spots," "Lupes," and the like for occasional special effects. It is obviously in the floodlighting equipment that the greatest

improvement is possible. The requirement for this type of equipment is a wide-spread beam, covering a horizontal and (if possible) vertical arc of about 60° with extremely uniform light-distribution. The high intensity of either mirror or condenser type spotlights is definitely undesirable for this use, which demands an even, soft light.

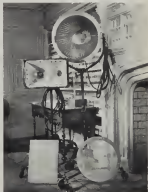
The actual light-sources most frequently used in "broadside" and "Rifle" are 1000-watt, pear-shaped bulbs. No decrease in strength is desirable, and although the high-intensity principle of the Photoflood and Wave-flood bulbs tends somewhat to reduce the heat, by lessening the infrared (heat) emanation, I do not personally look to this for the solution, as this principle not only tends to lessen the useful life of the bulb, but also lessens the carrying power of the light emitted.

The solution seems therefore to be purely a matter of improved mechanical and optical design in the lamps themselves. The field, range and quality of the light should at least maintain the present standard, and it seems probable that the type and form of the light-source—the bulb itself—will also probably remain constant, though undoubtedly a physically smaller bulb would be advantageous.

Yet even without reducing the size of the bulb, it should be possible to make considerable savings in the size and weight of such units. Reflectors could be made, not only of lighter metals, but also, with more painstaking and scientific design, of more compact dimensions and greater efficiency. Due to the fact that relatively small bulbs are used in these units, the problem of ventilation and heat-dispersion is not nearly so great as in the case of the larger units, while the fact that the bulb in a floor-lighting unit is not so completely enclosed as in a spotlight, further simplifies the matter. Double construction will still be necessary, of course, but if the design is based on a small, compact reflector, with or without the benefit of a bulb of smaller dimensions, the outer shell could still be made much smaller than in most existing units.

The mounting and carriage, while reduced already to very nearly the minimum dimensions, might well be lightened considerably by the use of some of the more recently

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The two types of lighting unit most frequently used for floor lighting. Right, the "Rifle" lamp; left, the twin "Broadside" unit. Photo by Robert W. Coburn, A.S.C.



At top, photo of a miniature railroad train. At bottom, as it was used for a background plate in the production.

Use of Miniatures in Process Backgrounds

by

Vernon L. Walker, A. S. C.
Head of Camera Effects Dept., RKO Studio

TO MANY cinematographers and other film technicians, a miniature is a miniature, and a process-shot is a process-shot, and never the twain shall meet. Yet actually, the two may often be combined to great advantage. Very often, a script will require some scenes or sequences to be enacted before a background which, even though made with the conventional projected background process, could hardly be made satisfactorily or economically

without the use of miniatures. For example, a recent production at this studio had a sequence laid in a New York railway station in the year 1870. It required, not alone the station itself, but a moving railway train of the period. Of course, for important action, it would be possible either to build an actual train, or possibly to adapt modern rolling-stock rented for the purpose—but in either case, it would be prohibitively expensive.

Instead, we built a miniature train, and photographed it in a miniature station-set. This film we then used as a background-plate for use, like any normal projection-background, behind the real action, with a small and inexpensive foreground-set. The result was absolutely satisfactory, and the entire sequence was completed at a cost of less than one-tenth of the expenditure that would have been required for building a full-scale train alone.

Similarly, the use of miniatures for background-plates can often eliminate much danger, and enable us to get "thrill" action which would be difficult, if not impossible, to stage in any other way. In another recent film, the script called for a scene showing several of the principal players at an airport, while a big airliner crashed close by on the flying-field. It would be virtually impossible to film such a scene satisfactorily in the ordinary manner, for, aside from the effect upon the players and their work of such close proximity to an actual crash (of course, no retakes would be possible!), the element of danger would be much too great. Even filming the crash itself in actuality, and using this as a background-plate, would be not only expensive, but prohibitively dangerous. Therefore, we staged our crash in miniature, and utilized the resultant film for the background-plate—and the scene was made perfectly, with no risk to anyone, and at a tremendous saving.

In another production, "Lucky Devils," the script called for some "thrill" action showing a player in a small boat shooting some treacherous rapids, while other players, in the foreground, looked on from the shore. Here, again, the element of danger, and its psychological effect on the players, entered. Moreover, to actually find such rapids, and to transport either a full company, or only a skeletonized background unit to work on such a location, would bring the expense up to unnecessary heights, and needlessly lengthen the production-schedule. Accordingly, we constructed our rapids in miniature. The action of the boat shooting the rapids was, naturally, an easy thing to film in this way, and the resulting film gave us a background-plate which enabled us to film our foreground action perfectly, with no risk or delays, and relatively small expense.

A further advantage to the use of a miniature for the background-plate was that, by shooting simple shots of the miniature rapids from the right angle, and without the boat, we were able to make excellent process scenes showing the player in the boat, in close-up. Yet another sequence in the same film required the player to enact several scenes in the churning water at the foot of a high waterfall. Such action would, of course, be highly dangerous to the player, if a fall of any size were used—and worthless if only a small cascade were shown. The Director and Recordsmen would be under disadvantages. But using a background-plate of a miniature waterfall simplified all of these problems, and enabled us to positively control every factor, so that the result was far more satisfactory than could have been possible by any other method.

Everyone who saw "Flying Down to Rio" will remember the sequence in which a squadron of planes flew over the

(Continued on Page 162)



PHOTOGRAPHY

of the MONTH

"THE WORLD MOVES ON"

Fox

Directing Cinematographer **George Schneiderman, A.S.C.**
Daily Variety (June 29, 1934) "—dreadfully gorgeous photography—" "—and Schneiderman's camera work is superb!"

The Film Daily (June 30, 1934) Photography "A-1"

"MURDER IN THE MUSEUM"

Progressive

Directing Cinematographer **James Diamond, A.S.C.**
The Film Daily (June 27, 1934) Photography "Fair"

"THE MERRY FRINKS"

Warner Bros.

Directing Cinematographer **Arthur Edson, A.S.C.**
The Film Daily (June 27, 1934) Photography "Good"

"SHE LOVES ME NOT"

Paramount

Directing Cinematographer **Charles Lang, A.S.C.**
The Hollywood Reporter (June 30, 1934) "Charles Lang, as usual, contributed A-1 photography."
The Daily Variety (June 30, 1934) "Charles Lang has photographed handsomely—"

"STAMBOUL QUEST"

M-G-M

Directing Cinematographer **James Wong Howe, A.S.C.**
Daily Variety (July 2, 1934) "—and the camera work of James Wong Howe is outstanding in especially creditable technical contributions"

The Hollywood Reporter (July 2, 1934) "James Wong Howe's camera work, as always, is worth mentioning, with a particular message for his lighting of Lee."
The Film Daily (July 7, 1934) Photography "A-1"

"THE NOTORIOUS SOPHIE LANG"

Paramount

Directing Cinematographer **Al Gilks, A.S.C.**
Hollywood Reporter (July 2, 1934) "The photography is standard"

Daily Variety (July 7, 1934) "—which Al Gilks has excellently photographed"
Motion Picture Daily (July 9, 1934) "Good photography"

"LADIES SHOULD LISTEN"

Douglas MacLean production for Paramount

Directing Cinematographer **Henry Sharp, A.S.C.**
Daily Variety (July 5, 1934) "Camera is well handled by Henry Sharp"

"FARRIS INTERLUDE"

M-G-M

Directing Cinematographer **Milton Krasner, A.S.C.**
Hollywood Reporter (July 6, 1934) "—with the exception of the photography which is much too good for it"
Daily Variety (July 6, 1934) "Photography by Milton Krasner was up to Metro standard"

"THE SCARLET LETTER"

Maestric

Directing Cinematographer **James S. Brown, Jr., A.S.C.**
Hollywood Reporter (July 6, 1934) "James S. Brown, Jr.'s photography is the best asset the picture has."
Daily Variety (July 6, 1934) "—and has been very well photographed by James S. Brown, Jr."

"ELMER AND ELSIE"

Paramount

Directing Cinematographer **William Mellor, A.S.C.**
Daily Variety (July 5, 1934) "William Mellor's photography is flawless"
Hollywood Reporter (July 11, 1934) "We suggest they keep the song and the photographer, William Mellor, and let the rest of the thing go"

"BORN TO BE KISSED"

M-G-M

Directing Cinematographer **Roy June, A.S.C.**
Hollywood Reporter (July 9, 1934) "Roy June's photography is splendid"
Daily Variety (July 9, 1934) "—and handsomely photographed by Roy June"

"SHOOT THE WORKS"

Paramount

Directing Cinematographer **Lee Toner, A.S.C.**
The Film Daily (July 7, 1934) Photography "Good"

"THE HELL CAT"

Columbia

Directing Cinematographer **Rayman Kline, A.S.C.**
The Film Daily (July 7, 1934) Photography "Excellent"

"ONE NIGHT OF LOVE"

Columbia

Directing Cinematographer **Joseph Walker, A.S.C.**
The Film Daily (July 6, 1934) Photography "Grade A"

Continued on Page 160



Shot on John B. Film with a T1 filter by George Loewenstein, A.S.C. Hubs in right hand corner are 14 miles distant



Fig. 1



Fig. 2



Fig. 3

Home-Made Photo Album

by
Robert J. Bronner, A. S. C.

UPON my recent return from a 33 000-mile cruise around the world I was confronted with the problem of printing and assembling an extremely large number of negatives.

I had so many that I realized it would take several albums of five or six inches in thickness were I to use the present method of mounting and posting in several hundred 4x5 and 3 1/4x4 1/4 prints.

I wanted to get away from the old style of mounting on the black pages of the present style album.

I felt if I could put them up in book form like a photographic magazine, yet retain the original prints on each page it would make a compact and descriptive album and tell the story of the cruise in pictures with captions typed beneath each picture would make a better looking album and be up to the latest of any album now on the market and more unique in style. Fact is, I wanted something different in albums of my own making.

After giving the matter considerable thought I succeeded in carrying out my problem in the following manner.

I purchased the top and bottom covers of a soft Italian forentine leather binder. Inside the covers I shellacked a panel of deep blue velvet, to prevent any scratching of the covers against the prints.

I then purchased a cheap Tex cardboard covered photograph album from a ten cent store from which I extracted the fifty black leaves and discarded the cover.

The black leaves I cut in strips of 1"x7" each. This gave me several hundred strips.

Next I purchased a few dozen 8x10 dry mounting tissue, which I also cut into strips of 1 1/2"x7". I also bought three aluminum metal posts and one gross of Azo 8x10 matt finish, single weight paper.

That was all the material I required and I was now set to carry out my idea of what a photo album should look like, especially one that covered so much territory in pictures as I desired to put in it. The above purchases all cost me less than five dollars.

My negatives were of two sizes all taken with Gortlex cameras, 4x5 and 3 1/4x4 1/4.

Before printing I cut masks to fit the two different sized negatives from one 8x10 masking chart. Each mask being cut to accommodate two negatives of either size, also extra masks for two of the same size each.

In cutting the masks a larger margin was allowed on one end for the purpose of binding and make all prints uniformly set on each page as shown in picture No. 1.

You will also note in the picture that the pages all remain flat without any curling of the corners or curvature of the pages.

A little difficulty may be encountered while trying to print two negatives of varying density on one page, but this may be overcome satisfactorily by decreasing the amount of light under the weaker negative or by inserting various thicknesses of tissue between the diffusing ground glass and the printing plate under the weaker negative, thus balancing the density of two negatives.

After the prints were made and dried, one-half inch was trimmed from each side of the length of the 8x10 page, thereby making the page 7x10.

All pages were then arranged in the order of my travel around the world. Of places and countries visited, commencing at Hollywood, California, to New York, thence to Havana, Cuba, through the Panama Canal, across the Pacific to the South Sea Islands, Australia, and stops at various islands enroute, such as Java, Bali, Ceylon, Arabia, Egypt, Italy, France and back across the Atlantic to New York.

Titles, captions and general description being typewritten beneath each picture on each page, two pictures side by side being printed on a page.

On the opening page in gold is shown a world map, and around it in gold English typed letters is printed, "A World Cruise In Pictures."

Continued on Page 165



RIDDLE ME THIS

The Riddle: Several studios have recently experimented with colored sets. What is your opinion of the value of color in sets—and what type of set do you prefer to work with?

HARRY FISCHBECK, A.S.C.: I feel that color in sets can be of considerable advantage to the cinematographer. A number of years ago, before the days of Ponchosnik film, I used sets tinted a warm, slightly reddish green, with great success, recently, on "Now and Forever," I have had a number of lavender sets, which I found very satisfactory. The particular shade used—really a blue with a faint admixture of red—gave a beautifully warm grey on the screen, and by controlling my set-lighting, throwing more or less light on the walls, I was able to secure an unusually wide range of gradations, from deep black to very light grey.

LEO TOVER, A.S.C.: Definitely, I prefer grey sets. If the walls of a set are tinted a soft, intermediate grey, the cinematographer can point upon them with his lights, getting a wide range of tonal rendition, and with the added advantage of being able at once to see exactly how the set will reproduce, without worrying over color-sensitivity or color-rendition of film and lighting.

REN WHITE, A.S.C.: Of course, I prefer grey sets. A cinematographer can work faster and more accurately with them, and get any effects he wants. In black-and-white pictures, we really have only three actual shades in the final product: black, white, and grey. If the set is already painted the right shade of grey, we can save a great deal of time, and get better results than if it were colored, for the color would photograph as some shade of grey, anyhow.

HENRY WILLIAM GERRARD, A.S.C.: By all means, grey sets. You can control the tonal rendition of such sets with your set-lighting, and eliminate all guesswork about color-rendition or light absorption. I have several times found colored walls very deceptive as to light-absorption; they generally absorb an utterly disproportionate amount of light, and make light-effects difficult, even impossible. This undue light-absorption necessitates more lighting units, more current, and more time in arranging the lighting.

DAVID ABEL, A.S.C.: Except where the nature of the action may make it advisable to use some color for its psychological effect on the players, I greatly prefer grey sets. Recently the studio tried some experiments with pink walls, in one of my pictures. I found them most unsatisfactory. Where a set is to be rendered as white, however, I like a very pale blue, which photographs as white, but without halation. Of late, there has been a dangerous tendency among Art-Directors to make sets—especially modernistic ones—with deeply overbearing corners, which make good lighting an unnecessarily difficult problem.

RICHARD TOWERS, A.S.C.: A capable cinematographer can naturally handle settings of any color. However, I believe that more attention should be paid by Art-Directors

to planning sets so that neither color nor pattern conflict with the costumes of the actors, or form disturbing elements in the composition, and to facilitate the work of the cinematographer. In this respect, I personally prefer cream-colored walls, as I have found them most satisfactory under the widest range of condition.

SID HICKOX, A.S.C.: Until there is fuller cooperation between the Art-Director and the Cinematographer, I'll be satisfied with almost any shade that isn't too dark. I have found that colors whose pigments are "earthy"—the umbers, etc.—almost always reproduce as they appear visually, while dyepigments are very uncertain photographically. For general use, I believe that grey walls are the best.

WILLIAM A. REES, A.S.C.: I prefer "French Grey"—that is, pale grey with a faint touch of blue. This permits plenty of scope in lighting, shadow-effects, and the like, without any of the disadvantages of either extremely light or extremely dark sets. Light—especially white—sets, I have found, reflect every bit of "soiled light," especially in panned long-shots, making it very difficult to light the players properly and at the same time maintain your set-lighting effects. Dark sets—whether actually black or merely darkened—drink up light like a thirsty camel, so that much extra time and current are consumed, and many additional lamps required, while the problem of lighting the players is made more difficult.

FAXON DEAN, A.S.C.: I prefer a soft cream-color, or egg-shell. This allows one to govern the tonal rendition by his lighting, while avoiding glare and undue light-absorption.

GEORGE SCHNEIDERMAN, A.S.C.: With the resources of present-day emulsions, etc., at his command, the cinematographer can effectively handle sets of any color. My own experience has shown that the best results are to be had with rooms decorated exactly as such a room would be in actuality. Within reasonable limits, the coloring of sets can go a great way toward developing and enhancing the proper mood-response in the actors. Therefore, I feel that since modern emulsions make it practical for a cinematographer to handle sets of any color, he should be willing to do so.

Continued on Page 165

The lavender set referred to by Harry Fischbeck, A.S.C. The walls of the set are lavender, while the plaster molding and pillars are ivory-tinted.





The test-laboratory of Warner Bros. Motion Camera Dept. Note developing and fixing tanks, with light-proof covers, next to right-hand bench. Photo by Charles Scott Wellhausen, A.S.C.

flush with the bench-top. The tanks will each hold three racks, each of which will hold about thirty feet of film. Between these tanks is a sink, into which the racks may be placed while the film washes in running water. At the far end of the bench is a room for the trays used for developing single-frame enlargements.

"The opposite bench is used for loading and unloading operations, and carries the enlarger (made from an 8x10 still camera, fitted with a special back and film-camera) and its easel. The light-source for the enlarger is in the further room.

"Fresh solutions are brought from the studio laboratory every day, and maintained always at the laboratory's standard temperature and strength, enabling us to absolutely duplicate the results of Gage's normal development procedure."

Meter Speed Control Shutters

● Dwight Warren, A.S.C., Chief Cinematographer for Educational Pictures, has perfected an automatic shutter-opening and meter-speed interlock for use with Mitchell cameras and meters. This device fills an important need in the production of comedies and action pictures, as it permits changes of camera speed during the making of a scene, automatically compensating for the change in exposure by reducing or increasing the

Continued on Page 154

Test-Laboratory in Loading-Room Saves Time

● Mike McGreal, head of the Camera Department at Warner Bros.-First National Studios, has just completed a miniature laboratory for the handling of camera tests, which should greatly increase the efficiency of the department. The test laboratory is located just off the camera department's loading-room, and has facilities for developing strips of 35-mm motion picture film up to twenty-five or thirty feet in length, as well as for making still enlargements from single frames of film.

"Our studio," states McGreal, "is faced with a peculiar problem: shooting is carried on in three widely separated studios in Burbank and Hollywood, the major part of the organization is centralized in the main plant in Burbank, while the laboratory is located at the Warner Sunset Blvd. lot, in Hollywood, several miles distant. Much valuable time can be lost in transportation between these points, and often it is decided, on this account, not to make tests which would prove a valuable safeguard. With this new laboratory conveniently located right in the camera department,

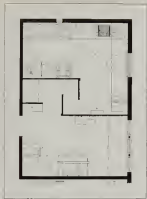
we can turn out photographic tests (negative) in less than twenty minutes, and even give the director of a large and expensive scene or dance-number an 8x10 still enlargement of a single frame within half an hour, thus giving him proof that his scene will be photographically all right, and enabling him to dismiss large groups, without fear of having to recall them for retakes.

"The test laboratory is in charge of my assistant, Cecil Myer, and under the direct supervision of Fred Gage, A.S.C. Laboratory Superintendent for the Studio. Mr. Frank Murphy, head of the Electrical Dept., aided greatly in the realization of the project.

"The dark-room is entered through a light-trap from the loading-room, and consists of a long, narrow dark-room, with a smaller room, entered through a light-tight door, at the farther end. The dark-room is fitted with benches along both walls. On the right side is the developing equipment: miniature tanks are set into the bench—one for developer, and one for hypo; these are covered with light-tight, hinged covers which close

The Warren speed-shutter change interlock. Wearing "A" its over button of motion, red "B" connects with shutter adjustment, both are controlled by lever seen at bottom of meter-housing.





Ideal Lab for Miniature Photography

by

Clarence Slifer, A. S. C.

IN KEEPING with the progressiveness that is so apparent in Miniature Photography, herewith is presented a plan of a model laboratory. This room in which photographic processing is carried on, is not called a darkroom, simply because that word is a misnomer. It is not dark, for at all times, with the exceptions of when loading magazines or developing tanks, there is an abundance of light properly filtered for printing and daylight for other operations.

Removed is the stigma that the word darkroom has implied. This model laboratory is not a poorly ventilated closet, under the cellar stairs, but is a room planned for comfort, convenience, and practicability. All of which are conducive to better photographic work and the full enjoyment of miniature photography.

From the plan, it will be noticed the room is divided into two main divisions, the laboratory proper and the study. The laboratory, to take care of all photographic work from glossy prints to the advanced pictorial processes. The study, to serve as a place for working out photographic problems

or as a place where you may argue with friends about the germes, the porphyrylones, and the reticulations of phytophagy, without having your sanity questioned by other members of the household or being relegated to that esteemed position now held by butterfly-chasing professors.

The essential features of the model laboratory are:

1. A shallow wooden sink provided with removable slats for tray supports. Its six-foot length easily handles three trays up to 16"x20" in size. Swing-faucets practically "cover" the entire sink. Above the sink are shelves for stock solutions, etc. Below the sink, are racks for trays, box for waste, and space for miscellaneous equipment. In the wall, above the right end of the sink, is a light-tight ventilator. This ventilator withdraws all hypo or chemical fumes arising from developing or fixing prints. Also at this end of the sink, is a light fixture containing a day light bulb. The light from this fixture is concentrated down upon the hypo or fixing tray, and is actuated by a foot switch. This permits examining prints for tone or contrast without drying the hands. The safe-light used for observing the developing of prints, has two degrees of brilliance: dim and bright. The bright light is controlled by a foot switch and is used only for limited periods of print examination. For cleanliness, liquid soap and paper towels are a part of the sink equipment.

2. A film developing bench especially equipped for miniature negative developing. The importance of agitation in small film processing is recognized by the inclusion of an electric agitation machine in the laboratory equipment. Also provided is a negative viewing box (a white light behind opal glass). Affixed to the glass are gamma films of different densities for use in judging the progress of development. (See Systematized Miniature Development, December 1933 issue of this magazine.) An ice chest for cooling solutions may be placed under the bench.

3. A print washing machine preferably of the Kodak rotating type. This provides a quick, efficient, and thorough means of washing prints with little handling.

4. A drain-board for prints after they have been removed from the washer.

5. A holder for paper towels and a shelf for the radio (the companion in the laboratory). Indicated here, is a stool, as much printing may be carried on while seated.

6. A double, indirect safe-light for general room illumination.

7. A long cabinet of an exaggerated desk-like appearance, with shelf or cabinet space above. Underneath the left end is a set of drawers for keeping Bromoil brushes, points, and other materials. Space is provided for leg-room when seated before the portion of the bench at the window. Here is an ideal place to work upon Bromoil spot or color prints, retouch enlarged negatives, etc. Underneath the right end of the bench, are frames with stretched cloth-net for laying prints upon, to dry.

8. A sliding light-tight shutter for the window.

9. A cabinet-bench for a miniature negative enlarger of the Lantz Facomat or Valoy type. The enlarger is controlled by a foot switch, thus leaving both hands free for "dodging." This freedom is further enhanced by the use of a metronome for timing prints audibly, during difficult exposures. At other times a large electric clock serves the purpose. On the wall, back of the enlarger, is an illumination Control Rheostat for use with a Photo-flood lamp, when enlarging upon chloride (contact) papers. Light-tight drawers are in the cabinet for the storage of photographic paper. To the left of the enlarger, is a print trimmer. To facilitate print trimming, the edge of the print

Continued on Page 122

PHOTOGRAPHY OF THE MONTH

Continued from Page 155

"CITY PARK"

Charterfield

Directing Cinematographer **M. A. Anderson, A.S.C.**

The Film Daily (July 6, 1934) Photography "Good."

"CROSS STREETS"

Inevitable

Directing Cinematographer **M. A. Anderson, A.S.C.**

The Film Daily (July 6, 1934) "Good."

"BARRETT'S OF WIMPOLE STREET"

M-G-M

Directing Cinematographer **William Daniels, A.S.C.**

Hollywood Reporter (July 13, 1934) "The photography of William Daniels is the photography of William Daniels—which means the best."

"HAT, COAT AND GLOVE"

Radio

Directing Cinematographer **Ray Hunt, A.S.C.**

Hollywood Reporter (July 13, 1934) "Ray Hunt's camera work is most effective throughout."

"HAPPY LANDINGS"

Monogram

Directing Cinematographer **Audie Stout, A.S.C.**

Hollywood Reporter (July 14, 1934) "Photography okay."

Daily Variety (July 14, 1934) "—excellently photographed—"

"MAN WITH TWO FACES"

First National

Directing Cinematographer **Tony Gaudin, A.S.C.**

The Film Daily (July 12, 1934) Photography "A-1."

"CALL IT LUCK"

Fox

Directing Cinematographer **Joseph Valentine, A.S.C.**

The Film Daily (July 12, 1934) Photography "Good."

"MURDER IN THE PRIVATE CAR"

M-G-M

Directing Cinematographer **James Van Trees, A.S.C.**

The Film Daily (July 12, 1934) Photography "Good."

"RETURN OF THE TERROR"

First National

Directing Cinematographer **Arthur Todd, A.S.C.**

The Film Daily (July 13, 1934) Photography "Good."

"I HATE WOMEN"

Goldsmith Productions

Directing Cinematographer **Ernest Miller, A.S.C.**

The Film Daily (July 11, 1934) Photography "Good."

"WHOM THE GODS DESTROY"

Columbia

Directing Cinematographer **Benjamin Klee, A.S.C.**

The Film Daily (July 13, 1934) Photography "Good."

"THE FIGHTING ROOKIE"

Mayfair

Directing Cinematographer **James S. Brown, Jr., A.S.C.**

The Film Daily (July 13, 1934) Photography "Okay."

"THE OLD FASHIONED WAY"

Paramount

Directing Cinematographer **Benjamin Klee, A.S.C.**

The Film Daily (July 14, 1934) Photography "A-1."

"DANCING MAN"

Pyramid

Directing Cinematographer **James S. Brown, Jr., A.S.C.**

The Film Daily (July 14, 1934) Photography "Good."

"SERVANTS' ENTRANCE"

Fox

Directing Cinematographer **Hol Mohr, A.S.C.**

The Hollywood Reporter (July 19, 1934) "Hol Mohr photographed beautifully."

Daily Variety (July 19, 1934) "Photography was excellent throughout—"

"HOUSEWIFE"

Warner Bros.

Directing Cinematographer **William Rees, A.S.C.**

The Daily Variety (July 20, 1934) "Camera work is flawless—"

The Hollywood Reporter (July 20, 1934) "—and William Rees' photography is an outstanding asset for the picture."

"FOUR WALLS"

M-G-M

Directing Cinematographer **Lucien Andrieu, A.S.C.**

Daily Variety (July 20, 1934) "Photography is good."

"NOW AND FOREVER"

Paramount

Directing Cinematographer **Harry Fischback, A.S.C.**

The Hollywood Reporter (July 20, 1934) "Harry Fischbeck's photography is so lovely that Corale Lombard has never looked more beautiful."

"TREASURE ISLAND"

M-G-M

Directing Cinematographers **Hol Rosen, A.S.C., Ray June, A.S.C., Clyde De Vinna, A.S.C.**

The Hollywood Reporter (June 23, 1934) "And for the photography that leaves a series of indelible beautiful pictures in your mind, thank, Ray June, Hol Rosen and Clyde De Vinna."

Daily Variety (June 23, 1934) "Maine stuff is strikingly pictured as part of excellent camera work by Ray June, Clyde De Vinna and Hol Rosen."

Motion Picture Daily (June 26, 1934) "Scenic and photographic values of old England and scopes are well done."

"HERE COMES THE NAVY"

Warner Bros.

Directing Cinematographer **Arthur Edson, A.S.C.**

The Hollywood Reporter (June 27, 1934) "Arthur Edson's photography is okay, but stunning effects that might have been gotten are entirely covered by stock shots."

Daily Variety (June 27, 1934) "Camera work of Arthur Edson also deserves high honors for interesting angles, novelty shots and scope."

The Film Daily (June 28, 1934) Photography "Fine."

"OF HUMAN BONDAGE"

Radio

Directing Cinematographer **Henry W. Gerrard, A.S.C.**

The Hollywood Reporter (June 28, 1934) "For those interested in good picture making, there is superb photography by Henry Gerrard and special effects by Vernon Walker."

Daily Variety (June 28, 1934) "Photography is good."

The Film Daily (June 27, 1934) Photography "Fine."

"KISS AND MAKE-UP"

Paramount

Directing Cinematographer **Leon Shamroy, A.S.C.**

The Film Daily (June 30, 1934) Photography "Fine."

"BABY TAKE A BOW"

Fox

Directing Cinematographer **L. W. O'Connell, A.S.C.**

The Film Daily (June 30, 1934) Photography "Good."

Germas Recovering

"Rudy" Gerus, manager of the Camera Supply Co. Ltd. is recovering in the California Lutheran Hospital from his recent severe attack of appendicitis.

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THE USE OF MINIATURES IN PROCESS BACKGROUNDS

Continued from Page 154

city carrying dancing girls on their wings. This, of course, could hardly have been filmed without the use of projected-background process, and here, too, miniatures played an important part. Several of the shots were made using a background-plate showing miniature planes, with miniature charlies on their wings, behind a real plane, with real dancers in the foreground. The effect could hardly have been achieved in any other way.

Naturally, the reverse of this procedure is possible—and has, in many instances, proven equally useful. For example, suppose we wish to show living actors in (not merely in front of) a set which can most economically be made only in miniature—let us say, a factory of the future. We build a full-scale set for the extreme background of our shot, and shoot our action and dialog with the actors immediately in front of this set. We photograph it exactly as though for a normal scene, but there is, of course, no trace of the foreground we want. This film is then made into a background-plate. In the meantime we have constructed our foreground-in miniature. At the desired point—just forward of where we want the people—we place a translucent screen, of the right size to give us the perspective we want. Upon this we project the background-plate we have made of our actors, and the resulting composite shot gives us our people walking around in the miniature set, which careful attention to the laws of optical perspective has negated to give the illusion of natural size.

This has actually been done in several instances, with pronounced success. It is even possible to carry the process several steps further: the background-plate showing the people can itself be a process-shot, with its background-plate made from a miniature (this, too, has been done) and the entire composite shot can, itself, be used as yet another background-plate, and repeated either in another miniature, or into full-scale action, by the projection process.

From this, it will readily be seen that the projected-background process has few limitations. The foreground action need not by any means be full-scale, nor need the background be full-scale, in both extremes, miniatures can be used to great advantage in cases which require them. Moreover, the process-screen part of a composite shot may include anything from a very small portion of the set—such as the viewing screen of a television receiver, or a window—up to virtually the entire area of the picture. To my mind, the use of miniatures as a

vital adjunct to this process is only beginning to be appreciated: it offers endless possibilities, not only as a means for filming fanciful action unobtainable otherwise, but (which is more important) as a very positive aid to economy, efficiency and safety in routine production.

Ideal Lab for Miniature Photography

Continued from Page 158

timmer is illuminated by a light, sunk in the cabinet.

10 An 11"x14" contact printing machine, which is used for printing enlarged negatives and also strips of Leica film, for proofs.

11 A film loading and negative filing desk.

12 Chemical closet, for chemical storage and mixing. In the lower part of the cabinet, is a bin for hypo crystals and a fixture for supporting a five-gallon

bottle of distilled water. Due to its location, chemical dust in the laboratory is eliminated.

13 Light-tight entry to the laboratory, affording easy access and ventilation. The partitions fold back, whenever it is desirable.

14 Dry mounting press, for mounting photographs.

15 Bookshelves, for those indispensable photographic books and magazines.

16 A light-tight film drying cabinet, six feet high. Air is drawn in, thru silk screens, from the study, thus minimizing the nuisance of dust. The cabinet may also be used for drying hyper-sensitive film.

17 A cabinet for camera equipment. Upon this cabinet is an easel for holding prints to be admired or proofed. A conventional, picture-illumination fixture is used for light.

18 A Bromel transfer press and a cabinet for card stock, etc.

19 Desk-like drawing table with long fixture for diffused light above.

20 Long, comfortable window seat.

The plan of this model laboratory is based upon the knowledge gained from a number of years' experience in many photographic "darkrooms." So turn back and study the plan over, for perhaps you may find some ideas for your Ideal Laboratory for Miniature Photography.

STUDIO CAMERA WITH 270° SHUTTER

Continued from Page 152

This would immediately increase the naturalness of our light-effects, simplify lighting, as it would bring visual and photographic effects into closer parity, and greatly reduce the heat cost on the actors by the lights.

But I believe that this is only a small part of what this design will bring us. A more important, and more readily noticeable result should be a far steadier picture, with the last remaining traces of "flicker" eliminated. Up to date, the greatest part of the flicker-reducing development has been in projector-design; surprisingly little has been done about attacking the problem through the camera. By photographing the picture with the film at rest for 75% of its cycle, we should eliminate the photographic causes of this flicker.

Furthermore, with the greater shutter-aperture, and the re-positioning of the shutter closer to the film, we should definitely eliminate the "bleeding" effect now seen in panoramic shots. In "follow-shots," where the camera panoramically follows moving people or objects, we should secure much more nearly the effect heretofore obtained only with the specialized Aksey camera, with its 230° focal-plane shutter. In other

words, the object being followed will remain clear and sharp, while the background moves behind in a smooth blur. This effect more nearly approximates the effect of natural vision, for, as is well known, the human eye is virtually blind when in motion, and when following a moving object, it can clearly see only that object, while the background fades into restless unimportance. This will naturally eliminate, too, the highly unpleasant "picket-fence" jumpiness seen in so many panoramic shots. This should greatly benefit photo-directional technique, for it will enable us to use panoramic shots in many instances where we are now forced to "dolly" the camera in order to minimize this undesirable effect.

The camera being used for this experiment is a standard Mitchell camera. The shutter and movement are being completely rebuilt to make use of the principle just outlined, but the camera will retain the essential features of the Mitchell. The shutter-aperture will, of course, be adjustable, so that apertures less than the full 270° may be had when needed. It is to be hoped that ultimately a complete camera may be designed and built, to allow an even fuller utilization of the principle.

Riddle Me This

Continued from Page 157

RAY BINGER, A.S.C.: I like light sets. Of course, there are certain types of story—mystery melodramas, and the like—where darker sets are preferable, but for general use, I prefer white sets. Granted that you have a good laboratory behind you, white sets give you the greatest freedom in lighting, and the most pleasing results on the screen.

HENRY SHARP, A.S.C.: For general, all-around use, I prefer gray sets. However, it is often desirable to have some degree of color in the set, for its psychological effect on the director and players. For instance, I have recently photographed a farce-comedy, "Ladies Should Listen," in which much of the action was played on cheerful-toned red-dish sets. With careful handling, these sets can be made to give effects very similar to monotone grey ones but—as with any color—the coloring makes them very deceptive. If one is not careful he can be fooled by the chromatic brilliance of the color, and find that, instead of reproducing as light as he actually sees it, the set goes very dark, while on the other hand, it is equally easy to overlight a colored set. This makes the arrangement of your "key" set-lighting a more difficult and lengthy



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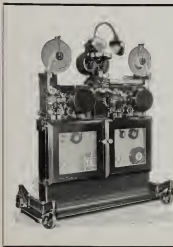
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process than it should be; therefore, I prefer monochrome greys wherever possible.

JACKSON J. ROSE, A.S.C.: Wherever possible, I prefer light grey, as it affers the greatest freedom in lighting. Pure white sets are more difficult to light be-

cause of the way they reflect "spilled light"; dark sets make it difficult to light the players properly. Therefore—light grey sets!

WILTON E. KRASNER, A.S.C.: I prefer soft white, wherever possible. I avoid glaze, yet gives one a finely reflective surface upon which to paint with light and shade.

OLIVER T. MARSH, A.S.C.: Coloring in sets affects too many people to be treated solely from any one angle. The psychological aspects—the reactions of the players and director to different colors in

the set—may well be as important as the purely photographic phase. Joan Crawford, for instance, does her best work when wearing predominantly blue costumes, and is actively miserable in certain other colors, which may even mar her performance. It is the same with sets for we are more conscious of color in rooms than in clothes. Therefore, so long as the lines and masses of a set are photographically correct, I feel that with present-day emulsions, we should be able to adapt ourselves to the set, rather than selfishly forcing the players to adapt their color-reactions to the camera.



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CAN WE HAVE LIGHTER LIGHTS

Continued from Page 155

developed alloys. There is, however, a definite minimum in size for such parts, if they are to withstand the hard service incident to studio use. Moreover, there should be some concentration of weight in the base to assure stable balance.

But—what is actually done in this direction? Is progress at a standstill?

Emphatically, no. While little actual production of new units is going on, the leading manufacturers have none the less been carrying on continued research

toward the development of such units. The engineers of Mole-Richardson, for example, have recently perfected a new two-arc "broadside," which, while intended primarily for use in three-color natural color cinematography, is also a somewhat of an advance in the general design of lighting equipment. It is considerably lighter than previous arc-broadside, and has a more even feed, in which the two arcs are fed separately, rather than, as in previous designs, by a single mechanism. The same firm has been experimenting with new types of reflectors, as well. One of the most promising is a matte-aluminum surfaced type, which could, according to Peter Mole, be built into a single-lamp unit comparable to the present "Rifle" type, and effect a 50% saving in weight, and a considerable saving in bulk. The design is fast approaching completion, and promises to result in a floor unit, intermediate between the present "Rifle" and "broadside" which should be of great value. The same firm is conducting extensive experiments with other types of reflectors and reflecting-surfaces including aluminum- and rhodium-plated types.

A recent development, too, is the Newton light, which, while intended primarily for commercial and still photographic purposes, shows promise for certain studio purposes.

Motor Speed Control Shutter

Continued from Page 158

shutter-opening. It was developed from an earlier invention of Warren's, a smaller motor-shutter interlock for Bell and Howell equipment, which had become universally used by photographers of comedies and action pictures prior to the advent of sound.

Due to the arrangement of the Mitchell camera and motor, the present device is much simpler than the earlier design. It can be fitted to any type of Mitchell motor in less than an hour, and once



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fitted it is instantly detachable, or may be left as a semi-permanent fitting.

Essentially, the device consists of a tubular housing mounted on the lower end of the Mitchell motor. A collar is fitted to the motor's speed-control knob, and, in turn, fits into an adjustable socket in the interlock, which in effect continues the shaft of the motor control to the lever seen at the bottom of the housing. Upon this shaft is fixed a special cone, in which slides a roller operating an arm connected with the regular Mitchell shutter-control. As the speed of the motor is changed, this connecting rod, actuated by the cone, operates the shutter control, accurately compensating for the changed exposure.

The device compensates for the entire range of speed-changes permitted by Mitchell motors: usually from 24 frames per second down to 4 frames per second. Means are provided for compensating for variations in shutter or motor response, which often varies between individual equipments. As the device consists of only a few parts—housing, cam-and-lever assembly, and connecting fittings for motor and camera—it is simple and sturdy. It may be easily disassembled, and the design permits reassembly only in the correct way. The cam—the heart of the device—is of steel, specially ground and hardened. Mr. Warren has used this device on several of his most recent productions.

Agfa May Move

• According to reports current in trade circles, the Agfa Row Film Co., distributors of Agfa negative and positive films, may shortly occupy new quarters on Hollywood's "Film and Laboratory Row"—

Santa Monica Blvd. It is expected that the firm will construct its own building. Verification of this report is expected to follow the return of C. King Chamey, new head of the Agfa distribution firm, from his trip to the factory at Binghamton, N. Y.



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Home-made Photo Album

Continued from Page 156

On opening the album one starts at the beginning of the cruise, and continues to the end, reading the captions and seeing the pictures at the same time.

Photographer friends who have examined this album have termed it, "Unusually unique, and nothing like it in existence to their knowledge."

There is one advantage in using white paper in an album of this kind, where the actual print paper is used as pages. There is no need of my explaining where such or such a picture was taken or what it represented.

In order to overcome the problem of binding the pages (pictures now), so each page would be hinged to avoid the usual rigid or curled edges, the plan that worked best I carried out as follows:

The black paper strips 3"x3" and the dry mounting tissue strips 7 1/2"x7" I had cut up as previously mentioned, I joined together by placing one inch of the dry mounting tissue over the black one inch strip, leaving a half-inch margin for a page to be attached to.

I tacked each strip on separately then ran a hot iron over to melt the tissue down on the black strips.

Having accomplished this I then took the pages, page for page, laid the remaining half-inch of the dry mounting tissue over the edge of the page and tacked it on, being careful to leave a sixteenth of an inch opening between the black strip and the page to allow it to work freely like a hinge. See picture No. 2.

In tacking the mounting tissue on to both the black strips and the pages the most convenient tool I found to use was a lady's curling iron. I found this held a steady heat and would not cause the mounting tissue to stick to it, like it does to other hot irons.

In fact, so useful did I find this curling iron for the work, I finished the job with it by merely rolling the curling iron slowly over the tissue after it was tacked on, which melted it down firmly to both the black strips and the pages.

Three holes were then punched through the covers and the black strip ends of the pages, screw posts forced through, all securely fastened and the album was finished, worthy for any pair of eyes to gaze upon. See picture No. 3.

The album completed has one hundred and seventy pages with three hundred and forty photographs and is less than two inches thick. All being in white background borders and tiled, the white borders setting off the photographs much better than if they had been mounted on black or brown mounting leaves.

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AMATEUR MOVIE SECTION

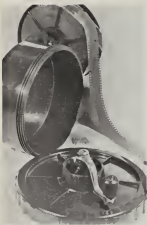
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Next Month . . .

PROFESSIONAL Criticism of the Amateur picture is a part of the service offered by the AMERICAN CINEMATOGRAPHER. Many are not aware of this. Hundreds of pictures have been reviewed this past year by members of the American Society of Cinematographers for the Amateur.

• More about 16mm negative-positive system. W. J. Grace will give us another of his interesting Cinetricks. Of course there will be the family continuity giving you an interesting story that anyone can make, scene for scene. Backyard movies will contribute more unusual plots.



The new Davidge Tank Developer for 16mm negative

What's New In 16mm Negative-Positive

by
William Stull, A. S. C.

ALL indications point to 1934 as ushering in a "New Deal" for 16mm negative-positive. During the past year—especially the more recent months—more interest has been evident in the use of 16mm negative than ever before in the history of substandard filming. Several of the major film-manufacturers have announced their entry into the 16mm negative field, new and highly practical equipment for developing 16mm negative is available, and more and more laboratories are commercially offering paraphenylenediamine "grainless" developing of substandard negative. In consequence, a renewed interest is being evidenced in the use of this film, both by individual pro-

ducers, and by the makers of educational and commercial films.

Undoubtedly, the keynote of the whole situation is the improvement in commercial laboratory work. For this, the American Cinematographer must take a goodly share of the credit. One year ago, following extensive practical researches, the American Cinematographer published an article emphasizing the fact that, with the proper treatment in the laboratory, 16mm negative film would give results in every way comparable to the best obtainable on reversal film, and advocating the use of paraphenylenediamine as the ideal developing agent for really fine-grain results with this film. Shortly after the appearance of this article, and admittedly influenced by its findings, the Dunning Process Company of Hollywood introduced "Grainless" development of 16mm negative, using a modified paraphenylenediamine developer. This literally revolutionized 16mm negative processing, and following upon Dunning's pioneering of fine-grain 16mm development, a number of other firms in this field followed suit, thereby removing from the path of 16mm negative film its greatest obstacle.

This has won the negative-positive system many new friends, among both individual amateurs and commercial and educational producers. Within the past few months, this has been substantially recognized by the film-manufacturers. The Agfa-Anso Company has just introduced, in addition to its popular reversal films, a very fine Panchromatic Negative film, while another large manufacturer, heretofore associated exclusively with reversal emulsions, is understood to be preparing a 16mm negative film for use in semi-professional work. Many rumors of still further additions to the 16mm negative family are current, with several leading foreign film-makers and at least one camera-manufacturer prominently mentioned.

The Agfa negative film, however, is definitely available, and has been tested by the writer. It is an excellent panchromatic film, with really admirable grain characteristics. In speed and color-sensitivity, it is closely comparable with the familiar Agfa Panchromatic reversal film, while, due to the inherent advantages of the negative-positive system, it evidences somewhat greater latitude than is possible with reversal. Like all professional films of today, it has anti-halation protection. It is regularly distributed in 100-foot, daylight-loading rolls, but for users of the various semi-professional cameras now available, it is also available in 200- and 400-foot rolls, in laboratory packing only, however.

Within the past few weeks, a most important developing equipment has been announced by the Ray Davidge Laboratory of Hollywood. This is the "Roto-Tank," and is developed from the reel-and-apron developing equipment which has been in daily use for some years in Davidge's processing of standard film for Hollywood's leading studios. The Roto-Tank system consists of a bakelite tank, a reel, and an embossed celluloid apron. The film is wound with the apron onto the reel, the embossed indentations on the apron serving to hold the film in position, with both surfaces away from the surface of the apron, so that the solutions circulate freely about the film. This idea, in itself, is hardly new, for aside from certain important (though unfavorable to most individuals) differences in the arrangement of the indentations, the outfit seems rather similar to other types already familiar. In actual practice, however, several features make the Roto-Tank outstanding, and a very definite advance over anything hitherto available.

In the first place, it is the first equipment which, so to

Continued on Page 186

Continuity for Fishing Families

by
Arthur J. Campbell, A. S. C.

IN MOST families, Father has a monopoly on fish stories—but here is a fish story in which the whole family can participate. Moreover, a fishing film of this type should be a better “audience picture” than the general run of films brought back from vacation fishing excursions, for it combines an entertaining story with plenty of opportunity for making attractive scenic shots—and it doesn’t attempt to show any actual fishing, which is as a rule very uninteresting on the screen.

The story is very easy to film, and requires few “props,” and only a small cast, such as can easily be assembled by the average family. No special photographic equipment or technique is needed, as there are no interior scenes, and only one shot that requires anything but straightforward photography. Best of all, you can fit the film into your vacation plans very easily, for it can be made anywhere—at home, at a camp or lake resort, or in part at both locations. Try it!

MAIN TITLE

“SOMETHING FISHY”

CREDIT TITLE

THE PLAYERS

Father
Mother
Junior
Bobby, Junior's Pal
“Toughy” the Neighborhood Menace

Scene 1. Long-shot of the family's home, or vacation-cabin. Mother and Junior are sitting on the porch. If possible, fade or iris in.

Scene 2. Medium “two-shot” of Mother and Junior on the porch. Mother hears something, and looks up. Junior also looks up, then excitedly runs out of the picture, off the porch.

Scene 3. Long-shot, from porch. If possible! Father approaches. He carries a fishing-rod and creel. He waves a greeting toward the house.

Scene 4. Medium-shot of Father approaching. Junior runs into the picture (from beside the camera). When he has greeted the boy, Father opens his creel, and proudly brings forth several fine, big fish. Junior becomes very excited, and pines around, obviously wanting to know all about how the fish were caught. Father motions him to be quiet.

Scene 5. Medium-shot. Father reaches the porch



and hands the fish to Mother, indicating that he's hungry. Mother takes them with a smile, and goes into the house. Father drops into a chair, while Junior hangs over the arm, and deluges him with questions.

Scene 6. Close-up of Junior, talking (preferably a big-head close-up).

Scene 7. Close shot of Father. He lights his pipe, and turns toward Junior, smilingly starting to explain.

Scene 8. Medium “two-shot” of Father and Junior, as Father tells his story. FADE OUT. If you wish, you can add a fishing-sequence here, showing Father's story—how he caught the fish. This, incidentally, is a good way to work in fishing scenes you already have on hand. If you do, begin and end the sequence with fades.

Scene 9. FADE IN. Close shot of a cat or dog on the back porch, eating the remains of the fish from a plate. Or, if no animal is available, a short shot of Mother throwing out the fish scraps.

Scene 10. Long-shot of the house. It is much later, as shown by the long shadows. Junior comes out, just as his cat, Bobby, poses by in front. Junior waves to him, and runs down to speak to him.

Scene 11. Medium “two-shot” of Junior and Bobby. Junior is telling Bobby all about the fish, and—like a good fisherman—exaggerating a bit, stretching his arms to the full to indicate the size, etc. Then he calms down a bit, and the two boys put their heads close together, obviously making some secret plans. Bobby nods his head, and they part.

Scene 12. INSERT—close-up of an alarm-clock, indicating 4 a.m.

Scene 13. Medium-shot of the front-door. Junior comes out, opening, and picks up Father's rod and creel. He glances furtively about, and then walks out of the picture.

Scene 14. Long-shot of a quiet country road, there is no traffic, and there should be long shadows, falling in the opposite direction in the frame from those in Scene 10.

Continued on Page 184



With a stop of f 12.5 the top picture gives a great depth of focus, while the lower picture with a stop of f 2.0 gives a very shallow focus as explained in this article. Photos by Clarence Miller, A.S.C.

SO FAR in our CINETRICKS series we have discussed those devices which most of us will concede are properly termed tricks. However, a complete discussion of trick cine work would have to include two phases which are not ordinarily considered unusual, yet lend themselves to trick work easily.

Lens Manipulation

Because we so often use the lens diaphragm and focusing adjustment in the normal manner, most of us are prone to overlook the possibilities for effect work in the manipulation of these two adjustments to secure certain effects.

The simplest manipulation we can employ is the closing of the lens diaphragm when we come to the end of a scene for a fade-out, or opening it from the smallest stop to the correct exposure stop for a fade-in. Quite properly, this is termed a camera trick and the use of the lens diaphragm in this manner is certainly useful if one is caught afield without proper fading equipment.

But suppose we reverse this procedure—what will we get? Since it very often happens that the scene is so well lighted that correct exposure calls for f 8, which isn't very far down the scale from the smallest stop. In other words, we have little chance to fade-out the scene. What to do? Try a "white fade," one which makes the screen go white instead of dark. Simply fade-out by opening the diaphragm to the largest stop for a "white fade-out." This isn't an effect which you may safely use often, because of the disagreeable optical effect of a white screen, but it should appear at least once or twice in your trick repertoire.

Aside from the obvious trick of changing the lens diaphragm while exposing, just how can we use the lens diaphragm to secure trick results?

Suppose you want to film a shipwreck using miniatures, or a train in miniature—how would you set your diaphragm to make the miniature appear to be the real thing? Would you shoot it wide open or stopped down? Before we make our decision, it will be well to review a peculiar character-

Cinetricks---

istic of lenses, one which has a very definite bearing on the matter.

You've heard of the term "depth of focus." Probably read it many, many times, haven't you? And, being a still as well as movie enthusiast, you no doubt have discovered a gap in your movie work which is quite easily spanned in still work, and that is in the matter of shutter opening as related to "time" or "speed" of an exposure. You have found that the variability of your still camera's shutter enables you to quite nicely run the gamut of depth of focus, but that your movie camera is a fixed shutter mechanism.

But now that we've brought us the matter shown how lacking amateur movie camera are in this matter of shutter adjustment, what's the sense of talking about depth of focus at all? We have a scene requiring a definite exposure, and since the only thing we can adjust on our camera to obtain correct exposures is to set the diaphragm, why talk about depth of focus? In other words, a given scene requires a definite diaphragm opening for correct exposure, and because the shutter can't be changed, we must let depth of focus go by the boards!

Not at all. Because the main road is blocked we simply have to take a detour. It may be rougher going and take more time, but we get there just the same. Some day the airline highway with adjustable shutters on amateur movie cameras will be opened, but until then we can take the more troublesome detour.

Scene work offers little chance for shooting at other than the normal exposure indicated for normal 16-frame speed. We can't control the sun. But in scene work the consideration of depth of focus is not nearly so important as indoor work, anyway, because nearly every object in the scene is so far away. The shots which benefit most by shooting wide open, or nearly so, are those made from two to twenty feet from the camera, and in many cases it is possible to control the illumination in such a way as to make it possible to shoot wide open.

What is shooting "wide open," and why must we say it so often? It simply means shooting with the lens at a large diaphragm opening to deliberately throw everything out of focus to a certain extent except the principal object. Professional cameramen found long ago the pleasing "three-dimensional" effect obtained with a wide open fast lens, explaining that the pictures so made are less "wiry." That is the artist's ascertainment for an effect which the scientist explores of greater length, to-wit: "When we look with our own eyes at a scene, we do not see all objects focussed sharply at one time. Our eyes concentrate on one object at a time, aware of the presence of other objects behind, before, and to one side of that main object, but nevertheless subdued with respect to importance. The importance is subdued, not by intensity of illumination, but by being out of focus." Therefore, unless our movie is to be strictly a photographic record, let us, whenever possible, shoot to obtain realness, lifelikeness, truth.

In outdoor work, to be sure, the means which amateurs may resort to to shoot wide open are limited. If we can select a shady spot the subject can be illuminated by light controlled thru the use of hard (shiny) and soft (diffused)

Lens Manipulation and Filter Tricks

by
W. J. Grace

metal or treated paper reflectors. And the light is usually of low enough intensity that the lens may be used at a large diaphragm opening for making the depth of focus rather shallow.

Another way to cut down the light entering the lens so that it may be opened wide is thru the use of filters. I hesitate to go into this phase very deeply, because of the confusion which attends any discussion of filter work in general. There is no such thing as a "general" filter, or even a set of "general" filters, in view of the great differences each filter will have when used with penta, ortho, superpan, panchrome (or verichrome), or positive stock.

If you have a good sunshade of the type which takes square filters (such as the Harrison or Brooks), a set of neutral density filters will come in handy for cutting down light without disturbing the color relations, and can be made easily somewhat in the manner of the dissolve or fade plate suggested by Mr. Campbell in the addenda to the July CINETRICKS. Make up a set of plates which have been reduced various amounts (each plate being uniformly reduced, however, unlike the fade plate which is graduated).

Controlling indoor light is the ideal solution for the amateur to try his hand at "wide open" shooting. Set up your scene just as you want it, then pull your lamps back from the subject until the exposure meter indicates something like f 2.5 or even f 1.9 for correct exposure. Incidentally, most of us do not properly light backgrounds, and pulling the lamps back from the subject will help counteract our errors by spilling more light on the background.

One more trick with lens manipulation and we'll pass on to filters for trick work. So far the lens manipulation has been concerned with the diaphragm, and we've neglected the focusing. "Now, there's an adjustment which just can't be fooled with! An out-of-focus picture is just no good!" Is that the thing you are planning to say? If so, just try this little stunt (professional cameramen have begun to use it in lieu of dissolves or wipes). Instead of making a dissolve or wipe-over, and one scene by deliberately defocusing the lens and follow with the next scene out of focus to begin with and then brought into focus. It's quite good, especially if adjoining scenes are shots of the same thing from different distances (say, for instance, a long shot followed by a medium, and this followed by a closeup, all coupled together by the in-and-out focus trick).

Filter Tricks

Frankly, I haven't the slightest idea of a good starting point for this phase of trick work. I realize that most of

Twin Lakes

Dear Bill,—

Wish that you were up here. Lots of fun and I'm sure getting my share! Swell country. Just nights to sleep up here. Can't you come up over the week-end?

Dan.

Twin Lakes

Dear Bill,—

I bet you're sure tricked! The poor jerk that I'm getting up here — are the "suckers" at the poker game every night — till dawnin'! Can't you catch the ball and slam him down, this week-end?

Dan

The letter at the top shows the even-numbered lines of the letter, the letter at the bottom, the uneven lines. That is, "I bet," etc., is the first line of the letter, "Wish that you" is the second line, and so on. The even-numbered lines were written in red ink. A blue G49 filter was used to photograph the top half; this wiped out the uneven lines and left only the red lines visible. The uneven-numbered lines were written in blue ink. This was photographed with a J5F filter, washing out the red lines and making only the blue lines visible in the bottom photo. Photos by Clarence Siler, A.S.C.

my readers are aware of the possibilities of the use of filters for trick work, but I hardly know at what point a general discussion of this kind may begin. It is something which can begin anywhere and end anywhere.

This much I would certainly advise—a good sunshade type of filter holder to carry square filters should be a part of your accessory equipment. Burleigh Brooks has marketed an excellent filter holder of this type for some time, and within the past few months Mr. Harrison, whose filter articles appeared a few months ago in this magazine, has placed another excellent filter-sunshade. Neither make is expensive and you'll have a lot of fun using the regular available filters or making up some of your own. Written filters in the form of very thin colored celluloid sandwiched

Continued on Page 185

Using a Process Background in 16mm Pictures

by
Jerome H. Ash, A. S. C.

A FEW weeks ago I was discussing 16mm filming with one of my friends. Both of us are professional cinematographers. I'm a 16mm enthusiast, he isn't. The argument grew rather warm, finally I told him, rather boastfully perhaps, that notwithstanding the limitations 16mm had when it began life, it has now developed to the point where one can, with regularly available 16mm equipment, duplicate anything possible with regular professional 35mm equipment. To all of which he replied, "Oh yeah? How about projected-background process shots?"

"And why not?" I countered. "We made 'em twenty years ago, when studio cameras weren't nearly as capable as the most ordinary 16mm camera of today. I'll bet I could go out tomorrow and do it with my little Cine-Kodak."

And I did. I made a little 100-foot 16mm picture that includes normal photography, miniatures, and projected-background process shots. Every bit of it was done with absolutely ordinary equipment, such as my amateur hat, or can easily build. The camera was my Model B Cine-Kodak, and the projector was an ordinary Eastman Kodakscope. I can't recall what model, other than the fact that it certainly isn't one of their deluxe types¹. The only other equipment I used was a sheet of ground glass, about 11x14 inches in size, a rectangular fish aquarium, three photoflood lamps and their reflectors, and a mirror. I made a couple of miniature sets with pebbles, sand, sea-weed and a painted backing, while for actors I used some tropical fish, and two little dummies I made to represent a diver and an octopus. The whole outfit was set up on my kitchen table—and left plenty of room to spare.

Here was my story: a pearl-diver sails with the fishing-fleet. When the boat reaches the fishing-grounds, he descends, and walks along the sea-bottom, looking for pearls. After a while, he sits down to rest. As he is sitting there, an octopus approaches from a cavern behind him and attacks him. Just in time, the diver rises, and draws his knife. After a battle, he kills the octopus, and continues his quest for pearls. That, of course, is just the bare skeleton of the plot, which was after all, only a sort of framework upon which to hang my "process shots."

Here's how I did it!

I opened the picture with a shot I had made some time before, showing the fishing-fleet at its docks at "Fishermen's Wharf," San Francisco. Next, I made a normal, close shot of my son loading some diving equipment (borrowed from a diver friend here) into a hand-cart. Then a closer shot of the fishermen loading their boat—not close enough, however, so that you could see whether or not it was the diving-equipment that they were loading! Next, a shot of one of the boats leaving the dock, followed by a couple of scenic seascapes one of my friends made in the South Seas. Then a shot, actually made on a dock, but

apparently on the deck of the boat, showing the diver's air pump being started, and the diver getting ready to go down.

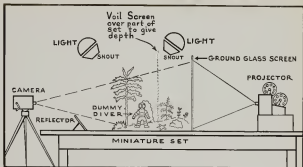
Here, the miniature work began. I built myself a little dummy diver—a little figure about five inches high, with flexible joints. I built a little set which suggested the side of a boat, and, working the diver like a puppet, got a shot of him going over the side.

Now for my underwater shots! I took an ordinary, rectangular aquarium, and some tropical fish—rather large ones, some of them two or three inches long. Behind the aquarium, I set up a painted backing, which suggested (I'm rather a poor painter!) the distance—seaweed, rocks, and so on. In the aquarium, I built up some submarine scenery, with white sand, pebbles (for rocks) and various types of sea plants. I wanted the fishes in fairly sharp focus, and as I was using my lens of F2.7, I knew the depth of focus wouldn't be very great, so I placed a clear piece of glass about two or two and a half inches behind the front-glass, and parallel to it, so that the fish would be confined to a relatively narrow area.

Normally, most of the light under water seems to come from above, so I lit my little tank from above. I had three photoflood lamps, with the usual type of reflector used for amateur lighting with photofloods. I built some concentrators (or "snouts") for them, similar to the ones described in this magazine a few months ago. (See the American Cinematographer for March, 1934, P. 458. Ed.) These lamps I directed into the water from above, at about a 45° angle. To get some front light on my little set, I made a reflector by sticking some burlap on a piece of cardboard, using the rubber cement you can get for a quarter at any auto-supply store. For a few shots, I used a gold reflector, made in the same way with cardboard and a bit of bronze wallpaper. One or two shots, too, I lit by reflecting daylight with an ordinary mirror, sometimes with parts of the mirror matted out with a piece of cardboard, in which I had cut holes of various odd shapes, so that I could get interesting light-effects. The only trick to the lighting of these shots was avoiding reflections from the glass surfaces.

I made several different submarine "sets," including the grotto from which the octopus was to come. The octopus itself was a "prop," which I built myself. I built its body out of cork and balsa wood, carved to shape. For the tentacles, or arms, I bored little holes in the balsa, and into them I fitted ordinary angle-wires, when these are dropped in water, you know, they writhe and twist just like the tentacles of a lively octopus. The next question was a real problem: when an octopus swims, he does so by taking in water through his mouth, and ejecting it through a vent behind. Finally I solved the problem by taping a bit of "dry ice" about the size of a pea, on the rear underside of my octopus. In the water, this "boiled" furiously, shooting out a perfect jet of bubbly water behind, giving a most realistic effect. To keep the octopus from bobbing to the surface like the cork it was, I had to ballast it with a tiny counterweight—and I'll admit that getting this weight placed properly was about the hardest job on the whole picture!

It was quite easy to move the thing around in my shots, using threads, and working the octopus like a puppet. I got some very satisfactory shots of it crawling out of the grotto, and approaching the camera. To make the picture more life-like, I visited one of the local aquarists, and got



a few close shots of a baby octopus they happened to have at the time which I cut into the picture for close-ups.

These underwater shots were largely for use as backgrounds, to be projected on a screen behind other foreground action. They were shot on ordinary SuperSensitive reversal film, at normal speed, with the lens at $f27$, and processed in the normal manner.

The process shots presented a peculiar problem: the projected background or "Transparency" process consists, essentially, of a camera photographing any desired foreground action, together with any desired background, which is projected from a strip of film, onto a translucent screen (usually ground glass) placed between camera and projector. Naturally, the shutter of the camera and the projector must be synchronized—that is, they must open and close together. Now, with most 16mm equipment, this seems impossible. It is, if you work at normal speed, but if you work in "stop motion"—one frame at a time—it becomes very easy. And though most amateurs don't realize it, any 16mm camera can shoot stop motion quite acceptably. I used my Model B Cine-Kodak for this, without any special attachments whatsoever; it required only a sure, quick touch on the shutter-release, to give me a single frame exposure. Occasionally, it is true, I would expose two or even three frames, rather than one, but I found that this didn't do any harm, but rather made my animation smoother. Of course, the ideal cameras for this purpose are those that definitely provide a single-frame movement—the Cine Kodak "Special," the Filma 121, and the Simplex. Using stop motion, it is simplicity itself to synchronize camera and projector: you simply pull your projector down one frame, make any changes needed in your foreground action, and trip the shutter of your camera. A device like the "Electronite," recently described by Wm. J. Grace, would, of course, make this still easier.

Shooting my process scenes this way, I placed my projector at one end of the kitchen-table, with the ground-glass screen (which was about 11x14 inches in size) about at the middle of the table. In front of the screen, I built a little foreground set, to represent sea-bereen. I walked my little dummy diver (he was about five inches high) into the set—by animation, of course. Then I sat him down on some pebbles, and shot the approach of the octopus, which was photographed on the background-film. Of course,

I had to have the octopus in the foreground for the light, so I had made some backgrounds of the same scene—without the octopus—for this. I used the same octopus for these shots, but I replaced the anglerworms with pipe-cleaners, dyed to the right shade to match the anglerworms. These, of course, made animation quite easy, as they could be bent to position, and would remain in place as long as necessary.

These scenes, too, were shot on SuperSensitive film, and processed in the usual manner. The only point to watch closely is to be sure that none of the light you use on your foreground set strikes the ground-glass screen. Virtually all of these underwater scenes—both the process shots and the miniatures—were shot with a No. 1 diffusing disc on the camera-lens, which softened the picture a bit, and added to the "underwater" effect. The idea, suggested by Jack Smith, A.S.C., in the June issue of this magazine, of using two frames covered with fine barbettoe gauze, and moved in opposite directions past the lens, would give an even better submarine atmosphere. In several of the shots, I put up little screens of voile between parts of the set and the camera-lens to give an added sense of depth, or distance, to my background. In a few instances, I highlighted these voile strips with ordinary aluminum paint, to represent flickers of sunlight filtering through the water, and I also painted in a few shadows here and there with dark paint. The materials I used for my little sets were very simple: white Monterey sand, which can be had at any fish or pet store, pebbles, and such sea plants as Volcanaria, "eel-grass," and sea-bananas. The latter, placed upside down, so that the little bulbs came at the top, represented kelp excellently.

Just as I was finishing this picture, a friend showed me his Cine-Kodak "Special." There is the professional cinematographer's ideal personal-movie camera! It will do anything a professional camera will—and at much less cost. I'm going to get one for use with some of the professional experiments I've wanted for some time to make. One of the first will be regularly synchronized process shots, made at normal speed. With this camera, it will be easy. In a forthcoming issue of the *American Cinematographer*, I'll describe how to do it—and tell more about trickery with 16mm equipment.



Arrow points to speed control of Eastman Cine Special

Using Camera Speeds Efficiently

by
Dwight W. Warren, A. S. C.

ONE OF the most useful accessories for personal filming is the speed control fitted to most of the better types of 16mm cameras. Yet it is hardly over used! To one who, like myself, has spent many years photographing professional comedies—which involve constant use of speeds above and below normal—this seems incredible, yet it is undeniably a fact. The average high-grade camera of today is fitted with speeds of 8, 12, 16, 24, 32, 48 and 64 frames per second, but, aside from a few experiments with "slow-motion" and half-speed, when the camera is new, most filmmakers of my acquaintance seem to leave the speed-control knob strictly alone. Yet these speeds were built into the camera for a purpose—to make the camera more completely useful to its owner.

Let's stop and recall the way these speeds work, then we can perhaps figure out how to use them. Sixteen frames per second is the accepted normal speed for taking and projecting silent pictures. The projecting speed is relatively constant at sixteen pictures per second, so any modification must be in the taking speed. Let us suppose that a given action actually takes place in one second, filmed at normal speed, this would require sixteen pictures (or frames) on the film, whether photographed on 8mm, 9.5mm, 16mm, or 35mm film. Projected at the normal rate of 16 pictures per second the result on the screen would be to reproduce the action exactly as it happened in life. Now suppose we photograph the same action with the camera running at half normal speed—8 frames per second. The action would be recorded on only half as much film, which would natu-

ally take only half as much time to run through the projector, with the result that the action on the screen would be twice as fast as normal. Suppose, on the other hand, that we photographed the same action with the camera running at double the normal speed, or 32 frames per second. This would record the pictures of the action over double the usual number of frames, so that when projected at the normal projection-speed of 16 frames per second, the action would take two seconds to screen, or twice as long as it did in actuality.

So much for theory! Now, how can we apply the principle to practical use?

Let's take the higher speeds first. The most obvious use is "slow motion," for slowing down sports, etc., in which the action is actually too fast to follow clearly. By running the camera at a speed of, say 64 frames per second, we can slow the action down four times, or "spread it out" over a period four times as long as it actually took. This is pretty well known, and frequently used by amateurs filming diving, football, track events, etc. But this burns up film at an alarming rate—96 feet per minute, in 16mm—so that it is, even at today's film-prices, rather expensive. Here is where the intermediate slow-motion speeds, 32 and 48, are useful. A great deal of action can really be shown better at such speeds than in extreme slow-motion. The action is slowed enough so it can be clearly seen, yet not so exaggeratedly slowed as with extreme slow-motion. Football, baseball, and many similar sports are really more effectively shown if photographed at such intermediate speeds. In the same way, airplanes hurtling near the ground—as at an air meet—are very effective on the screen if photographed at 36 or 48, but exaggeratedly slowed if shot at a higher speed.

Here's another use of high-speed: every now and then some celebrity, of whom you'd like a picture, visits your town, but unless you are one of the lucky ones, who can wangle a chance to greet the visitor with the newspaper photographers, your shot is usually limited to a brief blur of the distinguished person as he whips by in a car. Well, why not slow the car down by using slow-motion? It will work out very effectively—and if you bring the subject closer to you with a telephoto lens, you'll have a really worthwhile picture.

Extreme high camera-speeds are also excellent for filming miniatures: virtually every type of miniature except explosions can be filmed at 64. Miniature airplanes, trains, autos, and the like, filmed at this speed, gain an illusion of larger size, while their movement is greatly smoothed.

Similarly, any picture where you have to contend with vibration, or the like, can be improved by judiciously speeding the camera. For example, shots made from an airplane on auto, or a train will be much smoother and better if shot at 24 or 32. If you are shooting from an auto, by the way it is a good idea to drive the car a bit faster than normal, so that the road-shocks more or less overlap, and slow the movement down by speeding your camera. In this way, you can get exactly the same result as though you drove the car normally and shot at normal speed—but your picture will be much smoother.

But what, you ask, are the slower speeds for? Obviously, you can gain in exposure by slowing the camera to 12 or even 8, when the light conditions are unfavorable. Of course, you will have to offset this by having your people move slower than normal.

This idea can be put to good use, too, by using slower speeds—especially 12—for action which for any reason, is actually too slow. In comedies, for instance, we almost

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BACKYARD MOVIES

Movie Film Free

• To most cinematists, golf and movies are things that ought to go together—but usually don't. After the passing interest of those first few slow-motion shots of yourself and your friends driving, you begin to feel that golf is golf and movies are movies—and never the twain shall mix. But Lawrence McGinty, this month's prize-winning Backyard-scenarist, doesn't agree. And to prove his contention, he has contributed an extremely clever and entertaining golf scenario, which can easily be made in the course of an afternoon's round of your favorite course, with any camera, and a single roll of film. Mr. McGinty, it is a pleasure to present you with the roll of Panchromatic film. We hope your golf is as good as your film technique!

MAIN TITLE:

"HOLE IN ONE"

Scene 1 Close-up Score-card, with name of golf-club on cover. The card is being opened.

Scene 2 Close-up of inside of score-card, filled with "duffer" high scores. A finger is pointing to the short 150-yard hole, which is just about to be played.

Scene 3 Close-up of a golf-ball on a tee.

Scene 4 Medium close-up of the ball, about to be teed off, a club-head waves in and out of the picture.

Scene 5 Medium-shot of a player, about to tee off. He is waggling his club, duffer fashion, and has a set "do-or-die" expression on his face.

Scene 6 Medium-shot, from front of tee, showing the other three players in the foursome.

Scenes 7-9 Short close-ups (big heads) of the other three players. One is plainly disgusted, the other two jubilant, gleefully laughing at the fourth member of the party, who is not shown.

Scene 10 Long-shot. From behind the players, looking down the fairway. The player tees off, making a beautiful drive.

Scene 11 Close-up of the cup on the green. The ball rolls up, heartates on the edge of the cup, then drops in.

Scene 12 Long-shot of the foursome walking toward the green (coming straight into the camera).

This month there are two winners of 100 foot rolls of Panchromatic film. One of the suggestions has to do with the editing of your many miscellaneous shots of the family, while the other tees with the game of golf. However, you will find they are not complicated, they are not involved, try your hand, it's easy. If you don't win the month after your story is sent in, have patience. We received the "Family Album" idea three or four months ago. Remember, We give a 100 foot roll of Panchromatic film to those whose ideas we print on this page.

Scene 13 Medium-shot of some action, but with players closer to the green.

Scene 14 Long-shot of all players looking for the ball.

Scene 15 Close-up of Partner as he sees the ball in the cup.

Scene 16 Close-up of the ball nestling in the cup.

Scenes 17-19 Close-ups (big heads) of surprised expressions on the players' faces.

Scene 20 Medium long-shot as the players surround the lucky man.

Scenes 21-23 Close-ups (big heads) of the faces of the other three players, as they congratulate him.

Scene 24 Close-up (big head) of the hole-in-one, incredulously slowly turns to belief, and a blissful smile spreads across his face.

Scene 25 Medium close-up as hands slap the lucky man on the back, and others grasp and pump his hand.

DISSOLVE TO

Scene 26 Close-up of hands shaking the same player, seated in a chair on the club-house veranda—and asleep.

Scene 27 Medium-shot of the three men of the foursome, trying to awaken the fourth man—the one who dreamed of the hole-in-one.

Scene 28 Close-up of the face of the fourth man. He is smiling happily in his sleep. Slowly he awakens, then the smile slowly fades.

Scene 29 Close-up of feet. They slowly get up, and walk away from the camera. As they do, the camera tilts up, taking in the entire group as they go out

of the club-house door and walk toward the first tee. FADE OUT.
THE END
Lawrence McGinty, B.Sc.,
Buffalo, New York

"THE FAMILY ALBUM"

Everyone who owns a movie camera has photographed the members of his family. Most of these intimate glimpses are priceless, especially as time goes on, but as a rule they lack unity, and are nothing more than a hodge-podge of unrelated scenes.

Here is a way in which the movie-maker can utilize such scenes to form an interesting picture, which may be added to indefinitely. On this same plan, too, the beginner can build a good family picture.

The title is "The Family Album." Secure a suitable album—the older the better—and use its pages with suitable titles to introduce the members of the family.

We start with a double-exposed title showing someone opening the album. The best angle for the background part of this title is a shot over the right shoulder of the person looking at the album, showing the side of the reader's face, his shoulder and arm. The album is held in the lap, closed. The main title wording should be white, double-exposed over this background. If you can, it will be very effective to have the words fade out as the book is opened.

This can be made in two ways. We can do it by double-exposure, which, though slightly harder, is probably the best, or we can do it with a "glass shot" such as the professional cameraman uses for special effects. Using the first method, we first make our title as usual white lettering on a flat black card. Then we wind the film back to the starting-point, and make the background-shot, it might be a good idea to shoot this through a gauze, for diffusion, if you can do so. Using the "glass shot" method, we make the whole title of a single exposure. Print the desired lettering on a piece of glass about 10x12 inches in size, using white show-card color, or letters cut out from white paper. Suspend the glass about two feet from the camera (this usually gives an area of about 7x9 inches with most cameras), and photograph through the glass, with the background of the album, etc., beyond, just as in any normal shot.

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WHEELS OF INDUSTRY

16mm Sound On Film Camera

● The recent specialty built 16mm sound on film camera for R. Grazer, publisher of the *Boston Mass. Post*, from the factory of Eric Berndt demonstrates the advance that sound is making in the amateur field.

According to Berndt's announcement on this particular camera it is of the single system, studio type, variable area employing prism type finder, fog dissolves, 1000-foot external magazines interchangeable with 200-foot or 400-foot magazines. Equipped with four Zeiss lenses, 15mm 1", 35mm and 8".

The amplifier uses a new type Brush crystal microphone, mixer has 2 microphone channels. It is equipped with visible monitor for the sound track so that the operator can see the sound waves, during the recording operation, on a ground glass.

New 16mm Projector

● According to an announcement from FotoShop, Inc., of New York City, this concern is marketing a new 16mm projector employing a 300-watt lamp. This company places a special stress upon the cooling system which permits still pictures for a great length of time without burning the film. This projector is being marketed for \$38.50.

Filmco Seven Projector

● An 8mm motion picture projector, the Filmco 8, has just been announced by the Bell & Howell Company.

The new projector employs a 300-watt lamp in a direct lighting system, and operates on 110 volts, A.C. or D.C. Except that it is smaller, it looks like the Model J Filmco 16mm projector.

It is gear-driven—there are no chains or belts inside or outside. Among other features, it has an automatic power rewind, pilot light convenient tilt, essential finder, provision for still picture projection, Cooke 1-inch F 1.6 projection lens, and adequate cooling for use of the high-powered lamp. Its capacity is 200 feet of 8mm film.

M-R Silent Wind-Machine

● McLe-Richardson, Inc., report that they are completing a new, silent wind-

machine, especially for use in close shots. The device is driven by a quiet, low-speed electric motor and equipped with a silent fan, with blades of a new design. Running at 600 r.p.m. the new fan is reported to be sufficiently noiseless to be used within ten feet of the microphone.

Triple Focal Length Lens

● An advance circular from Bausch and Lomb announces a lens combination on the same lens giving three different focal lengths. Seemingly it is possible to secure this lens in different basic focal lengths giving a varied combination of focal lengths.

One would determine from the folder that this lens has been made for still camera work. Such focal lengths as 91", 133", and 181" are mentioned as possible with one lens.

New Espionage Meter

● According to an announcement from Photo Utilities Inc. of New York City that company is marketing a new photo-electric exposure meter that is seemingly very elastic in its uses and in the information that can be gleaned from it in use. We quote herewith the claims made by this company for this meter.

"The instrument works with uniform accuracy in any latitude, any time of the day or year, and can be used equally well indoors or in brilliant sunlight. The PHOTOSCOP can be pointed directly at the object to be photographed without shading the instrument with a hood or other means.

"Pre-setting to any film or plate speed from 8 to 30 degrees Scheiner.

"You may choose the English diaphragm stop series: f 1.4-2-2.8-4-5.6-8-11-13-16-22-32-45-64, or, by switching the stop scale over a half circle you may select the Continental diaphragm stop series: f 9-11-1.5-1.8-2.5-3.5-4.5-6-8-9-12-15-18-25-36-48.

"Exposure time readings. On the main scale, from 1/1000 to 100 seconds, on the auxiliary interpolation section of the scale down to 2500 seconds at stop f 64 for 26 degree Scheiner film.

"The same scale gives you one camera taking speeds of: 8-12-16-24-32-48-64-96-128 frames a second and the same scale contains specific Leica camera shutter speeds.

"The dust-proof, circular metal housing is 2 1/2 inches in diameter, 1 inch

high, has no protruding or loose attachments—just the lens in front and an unbreakable window slit on the side. Robust, expert construction and extreme smoothness.

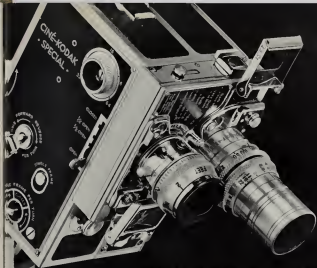
"The PHOTOSCOP is pointed or aimed like a camera. The scale is read in proper reading position, just as when you look into the "brilliant" reflecting viewfinder of a camera.

"The instrument solves swiftly and automatically any photographic exposure problem without changing the aim or shifting the meter. For instance—Super-speed panchromatic film. Set to 23 degrees on the Scheiner scale. You choose stop f 5.6. Turn this figure into the window, and the electrically guided pointer (needle) answers, "1/25 second". But you find the object moves too fast—1/200 second would be required to stop motion. Turn "1/200" under the red pointer, and the stop f 2 appears in the "f" window. However, your lens may have a speed of only f 2.8. Turn the 2.8 figure into the window, and the pointer indicates 1/100.

"Or, again, if you want to avoid your will of the greatest depth of focus. Bring f 32 into the window, and the pointer will instantly call for 1 tone second. Likewise, the film speed rating can be changed at any time. The automatic answer is given by the red pointer. During all this time, the position of the observer is not changed, nor is the meter removed from its original aim.

"The light is collected from the subject by the lens which is placed symmetrically about the cell axis, and the angle is further effectively limited by means of baffles or grids, situated between the lens and the cell surface. Over 45 percent of all the light comes from an angle of 10 degrees either side of the axis, and altogether 85 percent from an angle of 20 degrees on either side. Any other light beyond the total of 40 degrees of the light cone apex is of no practical influence upon the photographic exposure results.

"Temperature is of no practical influence upon meter accuracy. The PHOTOSCOP has been checked for use in tropical and polar regions as against temperature zone readings. Certain effect does take place, of course, from 32 degrees F. to 120 degrees F., but the percentages are of no photographic importance."



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HERE'S HOW

by A. S. C. Members

■ At a recent meeting of the Los Angeles Cinema Club, sponsored by the Eastman Store, the following questions were a part of the evening's program. Those who answered them correctly in five minutes were given prizes.

In view of the fact that these questions proved of such great interest to those amateur movie makers present, we are publishing them in this month's *Here's How* together with their correct answers.

It took is faster, or f1.5 lens or f1.8 lens?

The f1.8 lens is the faster. The designation "f1.8"—or any other speed rating of a lens using the generally-accepted "f" system—is simply a convenient way of expressing the ratio between the focal length and aperture of the lens. The "f" stands for the focal length, which is always regarded as unity. Writing it this way: "1/1.8" and "1/3.5", or expressing the ratios fractionally, has some lens-makers do, as "1/1.8" and "1/3.5", it becomes quite clear which aperture would be the larger, and accordingly, since it would admit more light, the faster.

How many frames a second is considered normal speed?

For silent pictures, sixteen frames per second is the normal taking and projecting speed; for talking pictures, the standard speed is twenty-four frames per second. The sixteen-speed for silent pictures has been the standard ever since the earliest films of Edison and Lumiere, and was probably adopted as the best compromise between smoothness in the pictured action and economy in film-consumption. The talking-picture standard of 24 was adopted because a higher film-speed was needed to assure good tone quality in sound-on-film, and because of the mechanical needs of synchronizing the Vitaphone discs and the picture-film.

When a picture is taken at 8 frames per second, will the action be fast or slow as projected?

Granting that the picture is projected at the normal speed of 16 frames per second, the action in a picture made at 8 frames per second will be fast. Let us suppose that a given action really takes place in one second if we photograph it

at normal speed, its phases will be recorded on 16 frames of film, which, when normally projected, reproduce the action on the screen in exactly one second. If we photograph this same action at a speed of 8 frames per second, however, we will only have half as many "frames" or pictures; accordingly, if we still project the film at the normal speed of 16 frames per second, the action will only take one-half a second on the screen. In other words, the movement will be twice as fast on the screen as it was in actuality.

Is it advisable to use a filter when taking close-ups?

It is not usually advisable to filter close-ups as heavily as one does long-shots or landscapes, as the heavier filters tend to lighten flesh tones objectionably. However, on Aero 1, Aero 2, or, in some cases with Superinertium film, a G filter will often make close-ups more pleasing.

Is it advisable to hold the camera as near hand when using a lens longer than one inch in focus?

No. Very few people have really steady nerves, or perfect muscular control, so that in spite of themselves, they cannot hold the camera absolutely firm and steady. A long-focus lens magnifies the image considerably, and, in turn, magnifies any unsteadiness in the camera or its support, which the magnification of projection again magnifies. Thus, unsteadiness which would, in a scene made with a normal one-inch lens, be so small as to be unnoticeable, would, with a two-inch or larger lens, be very unpleasant.

Is photographing fast-moving objects, at what angle should the camera be pointed?

In photographing fast-moving objects, the camera should always be pointed so that the object approaches the camera at a three-quarter angle, and comes *into* the picture, rather than away from it. This is to minimize blurring. If an object moves directly across the frame at a high speed, the image cast by the lens travels across the film at a high speed—often so fast that it moves perceptibly during the time the shutter is open, resulting in a blur, rather than a well-defined image on the film. If the object approaches the camera at a three-quarter angle, this relative movement on the film is greatly reduced, and also this movement is such that any blurring is much less evident in the picture. The same is true, in so far as movement is concerned, of an object retreating from the camera at the same

angle but a picture—still or moving—is more positive and interesting if it shows an object approaching than one showing the object receding. It is, therefore, a good plan always to have such objects coming into the picture, and to make it a rule that, the faster the object moves, the more nearly head-on it should be photographed.

What color-filter will turn blue sky blackest—red, yellow, blue, or green?

A red filter will turn a blue sky blackest. The action of any color-filter is to hold up all or part of the rays of any color other than that of the filter, in order to let other rays have a greater effect on the film. The red filter holds up virtually all of the blue rays, and as nothing is added to take their place, the blue portions of a picture (including, of course, the sky area) are naturally darkened.

If you use a red filter as a red object, will the object photograph light as dark?

Using a red filter on a red object, the object will photograph light. Just as this filter holds up the blue light, making blue objects photograph dark, it freely passes red light, making red things photograph lighter. This would not be so completely the case were the exposure not increased to compensate for the action of the filter; but, as it is, more red light than normal reaches the film, and, accordingly, the image of the red object gets more exposure than normal, and appears lighter.

If the correct stop is f/8, and you put on a four times (4x) filter, what is the correct stop to use?

The correct stop in this case would be f/4. The filter-factor given for the filter (that is, the number of times the exposure must be increased in order to secure a normally well-exposed negative with the filter) is 4. Accordingly, the exposure must be four times greater than that given at f/8. Increasing the lens-opening one full stop doubles the exposure, accordingly, to get four times as much exposure, we must open the lens two full stops. If the original exposure is f/8, opening it up two full stops will bring us to f/4.

If at normal speed, the correct stop is f/8, what stop is correct when shooting at a speed of 22 frames per second? At 16 frames per second?

The correct stop at this speed would

Continued on Page 159

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CONTINUITY FOR FISHING FAMILIES

Continued from Page 173

to indicate early morning. Junior comes into the picture from one side, and Bobby enters from the other, both are equipped with rods and reels, and Bobby may also carry a tin bait-can. They join, and walk together toward the camera.

Scene 15 Long-shot, reverse angle from the preceding scene, the two boys are trudging down the road, away from the camera.

Scene 16 Medium long-shot. "Taughy" is shown in his pond. He is a bit larger than Junior or Bobby, and a rather rough-looking youngster. He sees something out of the picture, and walks toward it. The camera pans to follow him, and shows the road, with Junior and Bobby approaching.

Scene 17 Medium "three-shot." "Taughy" has stopped Junior and Bobby, and is insisting that they take him fishing with them. They refuse.

Scene 18 Medium long-shot. The two boys hurry off, a trifle scared. "Taughy" starts to follow them, then stops, grinning, and slips behind a tree, where he is hidden from the boys (but not from the camera) and watches them go.

Scene 19 Long-shot, at another point along the road, shot across the road. The two boys walk through the picture. A moment later, "Taughy" enters, following them, and slips behind a tree, only to dart out again, still following, but keeping concealed from Junior and Bobby.

Scene 20 Long-shot, by a lake-side. (This can be a very pictorial scenic shot.) Junior and Bobby enter (from camera right). They select a spot from which to fish, and start getting their things ready.

Scene 21 Long-shot, looking toward the lake. In the background, the two boys are getting ready to fish, in the foreground, "Taughy" (back to camera) is watching them, from behind a tree. Soon he turns away, and hurries out, toward the right of the picture.

Scene 22 Long-shot of a rubbish-heap. "Taughy" enters, and begins to rummage around for something.

Scene 23 Medium-shot of Junior and Bobby, baiting their lines.

Scene 24 Medium-shot of "Taughy," on the rubbish-heap. He picks up an old tin can, then an old boot. He looks up, prinks, and hurries out, camera left.

Scene 25 Medium-shot of Junior and Bobby; they are fishing, but nothing is biting.

Scene 26 Short long-shot of "Taughy," carrying boot and can, running along the road.

Scene 27 Medium-shot (close of

Junior and Bobby. They lay down their poles, leaving the lines in the water, and stretch out on the grass, looking up into the sky.

Scene 28 Long-shot of sky and clouds, made looking nearly straight up, as the two boys would see them.

Scene 29 Medium-shot of the two boys. One after the other, they grow drowsy, and fall asleep.

Scene 30 Close-up of "Taughy," peering from behind a tree.

Scene 31 Close-up of Junior—fast asleep.

Scene 32 Close-up of Bobby, also sleeping.

Scene 33 Medium-shot of "Taughy," as he emerges from behind the tree. He walks straight into the camera.

Scene 34 Long-shot. The two boys are stretched out on the grass, their poles still extended over the bank. "Taughy" enters, very quietly. For a moment, he looks down at the sleepers, then turns to the fish-poles. He pulls up Bobby's line, and attaches the can.

Scene 35 Close-up of "Taughy" putting the can on the hook.

Scene 36 Long-shot, same as Scene 34. "Taughy" quietly drops the line back into the water, then he picks up a good-sized rock, and ducks behind some bushes near the water's edge.

Scene 37 Medium-shot of the water, as the rock plunks down into it with a big splash.

Scene 38 Medium-shot, with camera near the boys' feet pointed toward their heads. First one boy, then the other, jumps to a sitting position.

Scene 39 Medium long-shot. Bobby grabs his pole, sure he has a bite, and pulls in the can.

Scene 40 Close-up of "Taughy," behind the bushes, trying to subdue his laughter.

Scene 41 Long-shot, toward the lake. Bobby throws his line in again, and the two boys settle down once more.

Scene 42 Close medium-shot. The two boys again fall asleep.

Scene 43 Close-up of "Taughy," behind the bushes. He looks out, and sees that the boys are again asleep, and starts toward the camera.

Scene 44 Medium-shot. "Taughy" pulls out Junior's line, and attaches the boot. After carefully lowering it into the water, he picks up another rock—rather larger than the first—and once more hides himself.

Scene 45 Medium long-shot. The two sleeping boys are in the foreground, close to the edge of the water, with their poles hanging over the edge. The big rock comes into the picture (from the

side near "Taughy's" hiding place), and splashes into the water. If possible, have this land so that it splashes the two sleepers. Both boys jump up quickly, and Junior hurriedly reels in his line.

Scene 46 Close-shot as the boot emerges, dripping, from the water.

Scene 47 Medium-shot of Junior, as he disgustedly jerks the boot from his line, and throws it on the ground.

Scene 48 Close-up of "Taughy," laughing. Finally the joke is too much for him, and he laughs loudly.

Scene 49 Close shot of the two boys; they hear the laughter, and turn toward "Taughy's" hiding-place.

Scene 50 Medium-shot of the bushes, as "Taughy" emerges, still laughing. The two boys come up, talking angrily. Suddenly Bobby looks down and points, greatly surprised.

Scene 51 Close shot of the boot, it is flopping around as though alive.

Scene 52 Medium "three-shot" of the boys. Junior rubs his eyes, as though to make sure he isn't dreaming. Bobby pinches himself, and "Taughy" acts rather frightened.

Scene 53 Medium long-shot. Junior screws up his courage, and picks up the boot, turning it upside down.

Scene 54 Close-up of the boot as Junior turns it upside-down, a lot of water pours out—and with it, a live big fish!

Scene 55 Big-head close-up, panning slowly from one boy to the other. All three are amazed. "Taughy" is rather crestfallen, while Junior and Bobby are elated.

Scene 56 Long-shot. Junior and Bobby slap "Taughy" on the back, and shake his hand, thanking him for the good luck he has brought them.

Scene 57 Long-shot, looking back along the road. The three boys are walking away from the camera, arm-in-arm.
FADE OUT THE END

The only difficult shot in the picture is the one showing the boot flopping about. This can be made in stop-motion (one frame at a time) if your camera permits this sort of work. If not, it can easily be made at normal speed, moving the boot about with a black thread, which will not show. Allowing for the retakes you will probably have to make in order to get the splashing (Scenes 37 and 45) right, this continuity should require about 150 feet of 16mm film. Of course, you can add as much as you wish—Father's fishing sequence, suggested after Scene 8, a variety of scenic shots, and so on. You can also add parts for friends, or other members of your family, if you wish, while if you want to try some interiors, you can improve the picture by inserting a sequence in place of Scene 9 showing the family eating, and another shot at the end, showing the three boys gleefully consuming the fish that they have caught.

Wheels of Industry

Continued from Page 180

Note-Book for Amateurs

• The Wilshire Personal Movie Co., of Los Angeles, California, have just published a handy, pocket-size data and note-book for amateur cinematographers. Much useful information is to be found in this booklet, including such important facts as filter exposure-tables for Eastman and Agfa Super-sensitive films, Weston-meter and Schenker speed-readings of all popular films, general filter-factor tables, shutter-speed charts for moving objects and aerial photography, indoor exposure-guide, and the like, with thirty pages arranged for use as a note-book for recording full technical data regarding still, miniature-camera or cine pictures.

B. & H. 16mm. Sound Library

• Bell & Howell Company announces the establishment of a 16mm sound-on-film rental library with branches already opened in various key cities of the country.

Fully a hundred 400-foot reels from Educational Film Corporation and other producers are now available in the library. In addition to such popular informative pictures as "Kraakuhä," spectacular submarine volcano three-reeler, is the Epi educational series with subjects on acoustics, energy, etc., also beautiful presentations of outstanding operas, including "Carmen," "Faust," and "Martha," a fine array of travel subjects, rickshacking comedies, and a large variety of well-selected miscellanies.

Pioneering in the library listings will be what is called a series of Feature Lecture Films, including five subjects in which the voice of the well-known explorer, Rev. Bernard Hubbard, will be heard describing his Popular Alaskan pictures. In this same series the voice of A. M. Bailey, director of The Chicago Academy of Sciences, will be heard in an interesting running commentary of his movies at "Wild Life Over the Gulf of Mexico," also in a similar manner, Richard Fennee, the dashing young Arctic adventurer, will describe his popular picture "Among the Igloo Dwellers." Major Saunders will likewise be heard accompanying his "Republics in the Clouds"—a really remarkable motion picture of the little known countries of Bolivia, Peru, and Ecuador.

The name of the library is the Bell & Howell Filmesound Rental Library. H. A. Sparuth, who helped build up the company's silent film library, is in active charge. Already branch libraries have been established in Altoona, Pa., Denver, Washington, D.C., Wilmington, Delaware, Baltimore, New York, Philadelphia, Providence, Rhode Island, Chicago, San Francisco, and Hollywood.

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What's New in 16mm Negative-Positive

Continued from Page 112

spark, takes 16mm negative development out of the dark-room aside from the initial operation of loading the reel and placing it in the tank, which must, of course, take place in the dark. (Any dark closet will suffice for this, however), every other operation can be conducted in full light, just as with the familiar developing tanks used for miniature-camera developing. This at once opens the field of 16mm negative developing to the average amateur. But there are still further advantages in this system: it requires smaller quantities of solutions than any other outfit with a similar capacity, and also provides for thorough agitation, which materially reduces the developing-time, and improves the quality and evenness of the result. As will be seen from the illustration, the cover of the tank is provided with a crank, while the tank itself has two small legs on one side. When the film and apron are threaded on the reel and placed in the tank, the solutions are poured into the tank through the light-tight opening in the center of the cover. The full capacity of the tank is approximately 28 ounces, but normally only 16 to 18 ounces of any solution are necessary. This is possible because the tank is placed upright, standing on edge, supported by the rim of the cover and the two small legs referred to. In this position, only the lower third of the tank is filled with the solution, which is distributed uniformly over the film by rotating film and reel, by slowly turning the crank.

A rate of approximately two turns per second is sufficient—more, in fact, would probably be undesirable. This provides the agitation so important in really good developing, resulting in a decided improvement in quality and grain, and reducing the developing time considerably—between 40% and 50%, according to the manufacturer. If, for example, you are using a solution which normally requires a 12-minute development, this agitation would permit you to secure identical density with better quality, in only six or seven minutes. It is by no means difficult to crank the film in this manner, as this writer can testify from personal experience in the course of tests made with the Roto-Tank.

For commercial installation, a small electric motor-agitator is being designed. It is, of course, also possible to fill the tank full, and agitate merely by giving

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the crank an occasional turn, but this is not recommended, as it does not, naturally, give such thorough agitation, and hence, neither improves the quality nor offsets the normal developing time. The Roto-Tank is at present made in but one size, adaptable for either 25 feet of standard film, or 50 feet of 16mm by an adjustable reel, and the use of opening of the proper width. It is quite possible, however, once one is accustomed to threading the apron, to develop two 50-foot lengths of film simultaneously, back to back, as many miniature-camera enthusiasts do. In this manner, two turnbuckles of developer will develop a full hundred feet of film—in contrast to the full gallon required to develop the same footage with conventional apparatus.

A further advantage offered by this system is the fact that with it, the individual amateur need not compound his own solutions, as the inexpensive, prepared diamine-type fine-grain developers sold for miniature-camera developing will serve his purpose excellently. The "Universal" developer of this type, prepared in 16-ounce bottles, is excellent, as is also the "Barotol," a borax-type I believe, which is dry, and sold in small tubes, ready to be added to the desired amount of water. If one wishes to prepare his own solutions, however, the following are recommended:

Paraphenylenediamine-Glycin Developer

(For normal exposure)

Paraphenylenediamine 10 grams
Sodium Sulphite 90 grams
Glycin 1 gram
Water to make 1 liter
Normal development time 22 minutes at 68° F.

For the very finest grain, with good contrast, but demanding double normal exposure (i.e., one full stop larger than normal aperture).

Paraphenylenediamine Developer

Paraphenylenediamine 6 1/2 grams
Sodium Sulphite (E.K.C.) 93 1/2 grams
Water to — 16 ounces
Normal development time 30 minutes at 68° F.

Using the Roto-Tank with these solutions, the respective developing times would be reduced to approximately 11 minutes for the Paraphenylenediamine-Glycin formula, and approximately 15 minutes for the straight Paraphenylenediamine solution.

Projection Control

Authored by Wilkom Mortensen, the Camera Craft Publishing Company have issued a compilation of articles written by the author on the subject of "Projection Control."

Mr. Mortensen's work is too well known to go into minute detail as to its value to the reader. He is among the foremost photographers in America and anything emanating from his pen is a worth consideration.

This book is profusely illustrated with halftones demonstrating the subject covered by the author. It is a 32-page book, paper-covered and printed on good coated stock.

Period Costumes

● A book that might prove valuable to those in the studios having to research for authentic costuming, etc., might be found in the publication recently issued by the Studio Publications Inc. and which sells for \$4.50 in cloth and \$3.50 in paper, under the title of "Elizabethan Pageantry" with a subtitle "A pictorial survey of costume 1550-1620."

In addition to halftone illustrations of the various costumes, it also has much historical information that will undoubtedly prove of value to those active in research work. Its glossary alone is a fine compendium of information.

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Using Camera Speeds Efficiently

Continued from Page 175

always shoot "fast chases"—that is, people running as fast, at 12, or even 10. The same is true of many types of action with automobiles—chases, skids, and the like. What we call "Wire Gags"—that is, action which we could not well stage normally, and which we direct" by means of invisible wires which pull the subject through its required action—are almost always filmed at speeds ranging from 12 or 14 down to as low as 6 frames per second.

And here comes a point the non-professional filmer rarely thinks of: speed-changes during a scene. This is quite possible with most 16mm cameras, since the speed-control sits on the governor, rather than by shifting gears. On the Filmo and Cine-Kodak "Special," it is quite easy, since you've had a bit of practice, to change speeds during a scene, though of course you should "as always" use the camera on a tripod. With the Victor camera, you can get a surprising range of speeds by altering the pressure on the release-button: a light touch giving a slow speed, and harder pressure bringing the speed up to the full indicated speed. For minor speed-changes, the latitude of reversal film and its processing (especially when photo-cell-controlled flasher lights are used in the laboratory) will take care of the changed exposure—but for more extensive changes, you will have to compensate with diaphragm (or stop), or (in the C-K "Special") by altering the shutter-opening. This is quite a trick—but practice makes perfect! It will be much easier if you fix a removable pin-arm onto the speed-change knob, and the diaphragm control, as well.

But—how to use this idea? In filming comedies, we almost invariably use high speed-changes, especially to speed action that doesn't mean much but yet can't be eliminated. Suppose, for instance, a man is to be or loose his necktie between more important action: we would, in the silent days, shoot the scene still at 16, then, when we come to this particular bit of action, we would quickly drop the speed to about 12, speeding up to 16 again as soon as more important action began. And, for the same reason, a scene that was physically unimportant, yet dramatically necessary—such as a character walking across a set, we would shoot entirely at 14 or even 12. Often we drop the speed to add "punch" to final action, such as skids, fights, and the like. With a little practice, you can, in filming, say, a fight, shoot most of it at normal speed, and then, when the knockout blow is struck, drop your speed to 12 or 14, just during that one blow, and make the blow seem much faster and harder than could be done otherwise. Similarly, suppose we are starting a chase, with Andy Clyde com-

ing out of a house, getting into a car, and dashing away: we shoot the scene at normal speed up to the time he gets into the car, and then drop the speed, so the car starts off much faster than normal. The reverse is also true, of course: we can bring a car into the picture fast, by "undercranking," and then speed the camera to 16 as Andy gets out, so that the rest of the action is normal.

Another thing to remember is that since the speed control works on the governor of most 16mm cameras, you can, if necessary, use settings between the marked speeds, and get speeds about half-way between those indicated: half-way between the "16" and "12" calibrations, for example, should give you approximately 14, and so on.

Frankly, I don't know of anything that would be so helpful to amateur pictures on more extensive use of speed changes, for it would pop up many on otherwise draggy scene. And it is surprisingly easy to do. However, take time to practice a bit beforehand, so that, when you do the trick with film in the camera, you can be sure you've got the hang of it!

CineTricks

Continued from Page 175

in between two pieces of optical glass are available in a wide range of colors and densities, so go to it.

With panchochrome and venichrome now available in 16mm as well as packs and rolls, the amateur can make up his own "album" of colors as they are rendered through various filters by making test shots with his still camera using the desired film, and refer to this in his movie making.

Consider this scheme: a color album of say, about fifty colors and hues, using panchochrome stock. Another album of the same colors through various filters. Still another using venichrome. Using the desired stock in your still camera, lay a number of small pieces of colored paper (either printed or hand colored) on the floor and take a snapshot of them with fast one filter, then the next. Preserve a scrap of each colored paper and paste it in the album so you'll know how it photographed under the given filter condition. Then, use another film stock in your still camera and make some more test shots.

If you will spend the time in making up these color albums, some of these days you will suddenly feel the urge to film something like the "Invisible Man," and you will discover the fine aid the color album will lend in picking out colors and filters which will make visible objects invisible to the film. And then a where the fun will start! Once the trick color absorption bug bites, there is no stopping until the porchouse comes into view!

Since I myself have a rather limited working knowledge of what various filters will do, I must refer you to the works of others, or, better still, to your own experiments. No matter how much you may learn of filters thru reading, your own work will be even more interesting, and as far as you are concerned, more practical. So make up your color albums, and go to it!¹⁴

HERE'S HOW

Continued from Page 162

be f 5.6. The normal speed is 16 frames per second at this speed, the average 16mm. cine-camera gives each frame an exposure of approximately 1/25 second. At 32 frames per second (exactly double the normal 16-frame speed) each frame would be getting only half the exposure it got at normal speed—approximately 1/50 second. To compensate for this, we must open the lens enough to let in twice as much light as was needed for a normal exposure at 1/25 second. Since each full stop lets in twice as much light as the next lower stop, we would, if our normal scene was correctly exposed at f 8, open the lens to the next larger stop, at f 5.6, for our scene made at 32-frame speed.

Should you panoscan normally from left to right or from right to left?

One should normally panoscan from left to right, as it is much easier to follow. In viewing any picture, our eyes invariably begin at the lower left-hand corner, and travel diagonally upward toward the upper right-hand corner. Hence, if we panoscan from left to right, we are working with, rather than against, this natural reaction—and the scene is much more pleasant to view.

What is the focal length of the average or worst lens on a 16-mm. camera?

The normal lens on a 16mm. camera is of 1 inch (25mm.) focus. This was chosen because, under average projection conditions, a picture made with a one-inch lens gives the closest approximation of the perspective seen in actually viewing the object. It corresponds quite closely to the normal perspective of the average eye. For the same reason, a 2-inch (50mm.) lens is regarded as normal for standard 35mm. films, and a one-half inch (12.5mm.) lens for 8mm. pictures.

If you use a 2-inch lens and then a 3-inch lens, which will show the objects the largest?

The three-inch lens. As the focal length increases, the angle shown in the picture decreases, and accordingly the picture-size of any given object increases. Considering the image-size of a 1-

Next month suppose we gather up all of the CINETRICKS and put them all into one concluding article. And, if other tricks not mentioned so far can be worked in, they will be mentioned along with what we've already reviewed. So until next month and the last chapter let's dig out the other three articles and see what can be done to consolidate the tricks.

inch lens as normal, a three-inch lens will give an image of any given object three times as large as the image of the same object given by a one-inch lens (provided, of course, that the relative positions of camera and subject remain constant), in other words, a three-times magnification.

Which lens will give the widest field: a 2-inch lens, or a 3-inch lens?

As will be noted from the answer to the last question, as the focal length of lenses increases, the angle included in the picture decreases, accordingly, the longer the focal length, the narrower the field of the lens. Hence, the 1-inch lens will give the widest field—nearly four times as wide as the field of the four-inch lens.

Backyard Movies

Continued from Page 175

Be sure that you have enough front-light on the glass to make the white letters stand out—but take care that there are no reflections from the glass itself. Focus the lens on the title, so that the wording is sharp; it does not matter if the background-action is a bit out of focus—in fact, it may even be better.

For the sub-titles, use the pages of the album, leaving the page turn (or drop down) at the start of each title, to give the effect of someone looking through the book. Each title should fade out.

Sometimes it will be possible to insert a snapshot of the person being introduced, on the title-page introducing him.

Almost any type of subject can be presented this way; however, in planning such an album-film, it is well to select action which is most characteristic of your character. And since it is a "Family Album," at least one close-up of each character should be shown.

If you care to, you can easily plan such a film, making your family shots in such a way that they will automatically fit into your album-film. And if you want to deliberately set out to make an album-film which will really carry out the idea, why not send the trunk up in the attic, dig out some of the old clothes

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EQUIPMENT PRIZES

Here are a few of the equipment prizes that will be given in this competition.

EASTMAN KODAK CO. gives a 16 mm. Kodescope Model K-75 Projector.

Value \$235.00

BELL & HOWELL . . . To the highest winner using a Bell & Howell Camera . . . Merchandise to the value of \$125.00 will be given . . . To the second best picture using Bell & Howell camera, merchandise to the value of \$75.00

VICTOR ANIMATOGRAPH CORP. gives a Model 5 16mm. Camera with F 2.9 Focusing Mount Delayer lens.

List Price \$175.00

CRAIG MOVIE SUPPLY CO. of Los Angeles, will give a Senior Rewind and Splitter.

Value \$19.50

HARRISON & HARRISON will give one of their universal Filter Holders and a set of 1 1/4 inch Multi-Filters consisting of yellow, red and green filters.

Value \$14.00

AGFA ANSCO CORPORATION gives 12 hundred foot rolls, Super Pan Reversible 16 mm. film to the highest winner using Agfa Film. Value, \$94.00

Also 12 one hundred foot rolls Pleoachrome Reversible Film to the second winner using Agfa Film. Value \$54.00

SUNNY SCHICK gives one Model MSA Electrophot.

Value \$17.50

THE CALVIN CO., authorized Agfa Laboratory of Kansas City, will give a complete set of Teiler-made 16mm titles to the highest winner using Agfa film.

Value \$50.00

will be given as PRIZES in our Amateur Movie Contest

CLOSING OCT. 31, 1934

This \$1000 will be divided very simply. There will be a grand prize of \$250.00 for the best all around picture. There will be from 10 to 15 prizes in the various classifications of \$50.00 each. Even though you may not win the first prize you would have a chance at the \$50.00 given for the best picture presented in the following classifications: Scenic, Travel, Educational, Scenario Home Movies, Kodacolor, Technical and any other classifications which might be brought forth by the entries made.

The American Cinematographer reserves the right not to declare a prize for any class if in the opinion of the judges there is not a picture submitted sufficiently good to be classed a prize winner.

If you intend to enter this contest, please send coupon on this page so that we might send you official entry blank.

Please send me one of your official entry blanks. I intend to enter a 16mm. 91/2mm. picture in your 1934 contest. I understand my entry must be in your office not later than October 31, 1934.

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